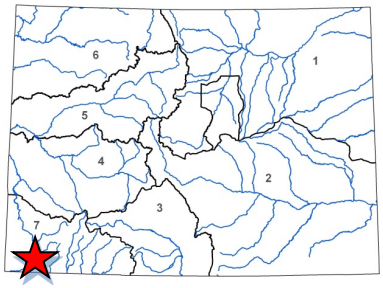
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Mancos Watershed Stream Management Plan Phase 2
Mancos Conservation District
January 2022 Board Meeting

Colorado Watershed Restoration Program Application



LOCATION	
County/Counties:	Montezuma
Drainage Basin:	Southwest

DETAILS	
Total Project Cost:	$1,200,100
Colorado Watershed Restoration Program Request:	$596,000
Recommended amount:	$300,000
Other CWCB Funding:	$0
Other Funding Amount:	$218,600
Applicant Match:	$385,500
Project Type(s): Planning	
Project Category(Categories): Stream Management Plan	
Measurable Result: Identified flow needs for native fish	

The Mancos Conservation District (MCD), Ute Mountain Ute Tribe (UMUT), Mesa Verde National Park (MVNP), Town of Mancos, Mancos Water Conservancy District (MWCD), Mountain Studies Institute (MSI), and the Mancos River Agricultural Committee (MRAC) are working together on the Mancos Watershed Stream Management Planning effort. These and other partners convene currently as the Mancos Watershed Group Leadership Team, and have worked together in some form since 2006. Along with its consultants and stakeholders, the Mancos Watershed Group will develop management objectives that are intended to provide measurable outcomes that help achieve the Stream Management Plan's goals. The goals of the Phase 2 SMP are to ensure the protection of the current water rights, continue outreach and engagement, and to pilot three projects recommended for river health and recreation. The stakeholders and partners will also work to define and publish the Mancos Watershed Stream Management Plan.

Collaborative Goals: Mancos Watershed partners will work together during this second phase to:

- Ensure the protection of existing water rights
- Continue stakeholder outreach, engagement and education
- Further improve understanding of Mancos River hydrology through model refinements, running scenarios, and conducting recommended legal management changes to address stream flows and dry-up points
- Continue coordinated monitoring and data collection and create an education and outreach campaign
- Continue outreach and refinement for Downtown Mancos Reach recreational needs, secure funding for the current Phase I proposal and take the necessary steps toward implementation
- Work with stakeholders and Mancos Watershed Group to implement the prioritized list of climate-informed recommendations through three-pilot projects
- And create and publish the Mancos Watershed Stream Management Plan

Unfortunately, the amount of funding in the Colorado Watershed Restoration Program cannot support a recommendation for full funding. This $300,000 funding recommendation represents the highest funding recommendation (tied with the Upper Gunnison IWMP) ever made for a SMP application. Some elements of the scope of work are outside of what is considered traditional for a SMP or Integrated Watershed Management Plan (IWMP). These elements are valuable for the Mancos watershed and may qualify for funding through other CWCB grant programs. CWCB staff will work with the applicant to amend the existing SMP scope of work and identify alternative funding sources for the unfunded sub-tasks in the scope.

Project Proposal Summary Sheet

Project Title: Mancos Watershed Stream Management Plan Phase II

Project Location: Montezuma County, CO, Mancos Watershed **Attachment C**
Grant Type: Stream Management Plan
Grant Request/Amount: $596,000
Cash Match Funding: $381,900
In-kind Match Funding: $215,000

Project Sponsor: Mancos Conservation District
Gretchen Rank, Executive Director
PO Box 694 Mancos, CO 81328
mancoscd1@gmail.com
(970) 533-7317 www.mancoscd.org

Partners/Project Description: Mancos Conservation District (MCD), Ute Mountain Ute Tribe (UMUT), Mesa Verde National Park (MVNP), Town of Mancos, Mancos Water Conservancy District (MWCD), Mountain Studies Institute (MSI), and the Mancos River Agricultural Committee (MRAC) are working together on the Mancos Watershed Stream Management Planning effort. These and other partners convene currently as the Mancos Watershed Group Leadership Team, and have worked together in some form since 2006. This proposed effort will implement the stream management recommendations identified by stakeholders in Phase I. Along with its consultants and stakeholders, the Mancos Watershed Group will develop management objectives that are intended to provide measurable outcomes that help achieve the Stream Management Plan's goals. The goals of this second phase are to ensure the protection of the current water rights, continued outreach and engagement, and to pilot three projects recommended for river health, recreational and management opportunities on lands along the Mancos River. Further, stakeholders and partners will work in this second phase to define and publish the Mancos Watershed Stream Management Plan.

Collaborative Goals: Mancos Watershed partners will work together during this second phase to:

- Ensure the protection of existing water rights;
- Continued stakeholder outreach, engagement and education;
- Further improve understanding of Mancos River hydrology through model refinements, running scenarios, and conducting recommended legal management changes to address stream flows and dry-up points;
- Continue coordinated monitoring and data collection and create an education and outreach campaign;
- Continue outreach and refinement for Downtown Mancos Reach recreational needs, secure funding for the current Phase I proposal and take the necessary steps toward implementation;
- Work with stakeholders and Mancos Watershed Group to implement the prioritized list of climate-informed recommendations through three-pilot projects;
- And create and publish the Mancos Watershed Stream Management Plan.

Estimated Completion Date: September 2024

Mancos Watershed Stream Management Plan Phase II

I. Basic Applicant Qualifications

Commitment to Collaborative Approaches. The Mancos Conservation District's mission is to promote long-term sustainable use and protection of the Mancos River Watershed. We are dedicated to an integrated watershed management approach that addresses the improvement of water distribution, on-farm irrigation systems, noxious weed control, rehabilitation of disturbed areas, and restoration of the riparian health and river channels. Over our 74-year history, we have collaborated with a diverse group of stakeholders and watershed partners to provide educational, financial and technical assistance to meet these conservation goals.

Project Purpose: Multiple Objective Approach. Phase II strives to accomplish six main tasks: Task l- support the Mancos Watershed Group through engaging our stakeholders; Task 2-Improve the Town of Mancos Recreational Opportunities; Task 3- Improve River health and flows; Task 4 – Watershed Health Assessments including vulnerability due to climate change; Task 5- Development of the Mancos Watershed Stream Management Plan; Task 6 - Complete all project coordination, administration and reporting.

II. Qualifications Evaluation

Mancos Conservation District (MCD), Sponsor is the lead organization on behalf of the ***Mancos Watershed Group***. MCD's Executive Director, Gretchen Rank, and Sensa Wolcott, Mancos Watershed Coordinator will co-lead the project, manage project deliverables, and coordinate the watershed group and the technical team. MCD will take the lead in contracting with Wilson Water Group, ElephantFish, Mountain Studies Institute, Stephen Monroe, the Mancos River Agricultural Committee and Dolores Watershed Resilient Forest Collaborative to complete all tasks assigned and work toward the development of a written Stream Management Plan for the Mancos Watershed.

Stakeholder Involvement and Technical Team. MCD will also leverage technical expertise of River Bend Engineering (river hydrology and recreation assessment, Phase I), Stephen Monroe (hydroecology consultant), and Mountain Studies Institute (drought/climate). MCD's stakeholders represent diverse community representation including, but not limited to, Mancos Water Conservancy District, the Town of Mancos, Federal Land Managers, Ute Mountain Ute Tribe, The Nature Conservancy, Mesa Verde National Park and the Natural Resource Conservation Service. These partners will provide guidance for recommendations, management options provide feedback on technical products and will prioritize strategies and actions. ***See Attachment B, Table of Current Involvement.***

In-kind Services and Cash Contributions. For this 3-year proposal MCD is leveraging $389,100 in cash and $215,000 in- kind contributions are being offered for a total match of $604,100 (51%). MCD offers $300,500 in committed cash contributions from Mancos Conservation District secured grant funding and cooperative agreements with NRCS. MCD has requested $88,600 in cash from additional partners, such as the Natural Resources Conservation Services PL-566 funds, Southwest Water Conservation District, Town of Mancos and other sources. The deadlines for award for unsecured match will coincide with CWCB board reviews. MCD has secured $215,000 in-kind contributions through a 3-year AmeriCorps VISTA, volunteers and MWG commitments. ln-kind contributions include: $27,000 from MCD for volunteer board members, staff and other volunteer participation, $30,900 from the MWG and $157,100 from a secured AmeriCorps VISTA Volunteer assigned fully to Phase II of the SMP. In total, CWCB funds would cover 49% of the total estimated cost of Phase II.

III. Organizational Capability

Collaborative History of Accomplishments. *Mancos Conservation District (MCD) (applicant)* has taken a leading role in watershed planning and projects in the Mancos Watershed since its conception in 1948. The Mancos Watershed Group (MWG) began in 2006 and is a collaboration of Mancos Valley landowners, community partners, nonprofits, and federal, state, local agencies involved in the watershed. The partnership began with the development of the Mancos Source Water Protection Plan in 2009. In 2011, with the support of the Colorado Nonpoint Source Program, MCD worked with the MWG to develop the Mancos Watershed Plan, and the Colorado Water Trust to complete an Instream Flow Report. MCD has worked with multiple partners to implement projects identified within these plans (*see Attachment 4: Report).* With support from CWCB, Southwest Basin Roundtable, Colorado State Conservation Board, National Resource Conservation Service (NRCS), Southwest Water Conservation District (SWCD), Trout Unlimited, Bureau of Reclamation and local irrigators, we have designed and implemented 11 diversion improvements and helped fund 2 additional diversions for implementation in 2022. These projects are testaments to our commitment to secure and improve irrigators' access to decreed water, all the while improving fish passage, channel stability and riparian habitat.

In addition, the 2012 Weber Fire, resulting post-fire debris flows greatly impacted the Mancos River, and 2012/2018 droughts united Mancos stakeholders in valuing the importance of an integrated approach to watershed health that recognizes the potential impacts of drought, fire, and climate change. The MWG has since embarked on an effort to identify drought and climate-resilient strategies for a holistic approach to river health. This collaborative effort is the foundation of this SMP proposal. MCD continues to build these relationships with partners and landowners through our commitment to identifying and completing integrated, multi-purpose projects in the Watershed and working with landowners one-on-one to improve their stream habitat.

Mancos Conservation District, Team & Level of Staffing. MCD has assembled an experienced team balancing MCD leadership supplemented with a qualified team of technical advisors. All of the partners and advisors listed have been working with MCD over many years and bring in-depth knowledge of the watershed to this project. MCD leadership will be staffed for this three-year project by MCD Executive Director/Co-Grant and Project Manager (1,400 hrs.), MCD Watershed Coordinator/Co-Grant and Project Manager (2,800 hrs.), MCD Technical team including, District Manager and two Conservation Technicians (8,000 hrs.). Community members and MWG (2,050 volunteer hrs.) and MCD AmeriCorps VISTA will contribute (5,500 volunteer hrs.) for River Watch sampling, Sonde unit maintenance, water quality data analysis and engagement and outreach projects.

Gretchen Rank, Mancos Conservation District, Executive Director, has worked with the District for 6.5 years coordinating and managing its projects and programs. She has more than twenty-five years of experience in accounting and financial administration for a variety of businesses, non- profits, and government entities. She serves on the Southwest Basin Roundtable, Dolores River Anglers TU Board/Conservation Co-chair and is the Southwest Director for the National Conservation District Employees Association.

Sensa Wolcott, Mancos Conservation District, Watershed Coordinator, joined the MCD team in 2021 and holds a Bachelor's Degree in Environmental Biology and an Associate's Degree in Sustainable Agriculture from Fort Lewis College. Sensa is currently pursuing her Masters in Biology with University of Miami, Ohio's Global Field Program where her work focuses on community-based conservation practices. She brings four years of teaching experience, two years of experience with the Colorado River Watch Program, and has experience in biology field work, data analysis and community event planning.

Neva Connolly, Mancos Conservation, District Manager, Neva also joined the MCD team in 2021 and in her current role with the District, Neva will bring 12 years of experience with riparian protection and resource conservation planning, stream restoration project management, inventory and monitoring database organization, and federal review coordination for pipelines, forest plans, and mining. Her previous projects involved extensive review in coordination with the Endangered Species Act Section 10 Multi-Species Conservation Planning and NEPA requirements.

Advisory Team Roles and Qualifications. MCD will leverage the collective experience of the following team of advisors and consultants to support the goals of this project:

Wilson Water Group brings extensive experience in agricultural water use, hydrologic modeling, environmental needs assessment, and water resource engineering. WWG offers expertise in water rights, as well as StateMod experience, which will assist in variable hydrology modeling. WWG is recognized to have agricultural expertise, including representing the State of Colorado as their agricultural expert in Interstate litigation. WWG has worked in the Mancos basin and has been involved with watershed projects resulting in alternatives that protect agriculture while benefiting river health, in other basins, including in the lower Yampa River, Upper Gunnison, and Los Pinos River basins.

Tammi Renninger, ElephantFish is the owner of ElephantFish, LLC and is a data-oriented GIS professional providing services to the water resources, geologic, and environmental industries with a focus on spatial data analysis, management, and display. With Tammi's experiential and academic background (BS in Geology and MS in Geographic Information Science) she meets her clients' geospatial needs with open communication and geologic, hydrologic, environmental, and geographic know-how. Tammi works with ESRI software including ArcGIS Pro, ArcMap, and ArcGIS Online, as well as Aquaveo's ArcHydro Subsurface Analyst. She also works in the Adobe Suite to create high-end cartographic maps or presentation displays.

Ben Wolcott, Agricultural Outreach Coordinator and MRAC lead, is a local Mancos Valley agricultural consultant with over fifteen years of experience in cattle ranching, hay production, water management, GIS mapping and business administration for Wolcott Ranches. He received his degrees from Fort Lewis College, Durango, Colorado — BS, Summa Cum Laude in Biology and an AA, Summa Cum Laude in Agricultural Science in 2009. He is currently serving as the president of the Bauer Lake Water Company where duties include organization and facilitation of annual member meetings, dam safety inspections, dam safety planning, and general business of the company to store and deliver irrigation water to its members. He also serves as President for the Beaver, Carpenter and Mitchell, Sheek, and Henry Bolen ditch companies. He serves as Vice President of Mancos Rural Water Company to ensure continuous delivery of drinking water to its members.

Colin Larrick, Water Quality Program Manager, **Ute Mountain Ute Tribe** is an Environmental Scientist with extensive education, training and professional experience related to ecology and surface water and groundwater hydrology. Currently employed as the Water Quality Program Manager for the Ute Mountain Ute Tribe leading in the development, implementation and management of the Tribes grant funded Regulatory Water Pollution Prevention Program.

Stephen Monroe, Hydroecology Consultant, is a hydroecologist who has been engaged in scientific studies and long-term monitoring of rivers and springs in the Four Corners region for more than 25 years. He worked in Flagstaff, Arizona as a Hydrologist for the United States Geological Survey from 1989 to 2005, and from 2005 through 2017 was the National Park Service Southern Colorado Plateau Network's Water Program Manager. Steve has a multi-disciplinary background with extensive experience in project design, project management, and study of complex stream ecosystems. Beginning in 2004, he coordinated

the National Park Service's Mancos River research and monitoring programs, and has been a member of Mancos Watershed stakeholder group since 2014.

Marcie Bidwell, MCD Mancos River Resilient Project/Mountain Studies Institute Executive Director has fifteen years of experience in planning and research, including leading report efforts and the USBR Drought Resilience project's decision support framework, which includes identifying climate smart opportunities to inform the prioritization and implementation process.

Danny Margoles, Dolores Watershed Resilient Forest Collaborative (DWRF) has coordinated the DWRF since 2018. With DWRF, Danny has coordinated risk assessments, the collaborative development of desired conditions and adaptive management frameworks for forest management projects, broadened the partner base, and facilitates ongoing stakeholder meetings and tours. Danny holds a M.A. in Geography from the University of Minnesota where he studied the long-term effects of mountain pine beetle outbreaks on forest ecosystems. Danny also periodically teaches in the Environmental Studies Department at Fort Lewis College in Durango, CO, and with the Wild Rockies Field Institute through the University of Montana.

Budget and Schedule. In Phase II over 36 months, MCD will complete several data needs necessary to embark upon the process of prioritization and implementation planning in Phase Il. MCD is confident in our ability to meet these goals due to the fact that (l) the majority of our funding is already secured: (2) our stakeholder group is active and has currently developed a suite of strategies and potential projects to implement in Phase II: and (3) our technical advisors have already been identified and are working in the basin. The budget request is based upon proposals and bids for services. MCD has a history of working in the basin, and we understand the elements of cost in our proposal. ***Please see the project budget and schedule detailed in Attachment E.***

IV. Proposal Effectiveness

Relevant Information and Background Supporting this Plan. MCD and our partners approach Mancos River management through the lens of adaptive management and a holistic watershed approach. Previous assessments provide a foundation for Mancos Watershed Stream Management Plan over our history of 13 years of collaboration and adaptive management. Information from these studies, which include watershed plans, geomorphic and habitat assessments, source water protection planning, and river restoration reports provide our foundation. Some of these include:

- Phase I Final Report and Attached Reports, MCD, September 2021
- Prioritized Drought Resilience for the Mancos Watershed, MSI, March 2021
- Mancos Watershed Drought Resilience Planning Final Report, 2020
- Mancos Valley Water Conservation Project, MCD, On-going
- Mancos River Habitat and Diversion Project Phase III, MCD, On-going
- Southwest Basin Implementation Plan, July 2015, Southwest Basin Roundtable
- Mancos River Habitat and Diversion Project Phase II Final Report, 2013 MCD
- Mancos River Water Quality and Trends Assessment, 2012, Ute Mountain Ute Tribe
- Mancos River Basin Instream Flow Report, Colorado Water Trust, May 2011
- Mancos Watershed Plan, Mancos Valley Watershed Group, May 2011
- Mancos River Diversion Project Phas3 I, MCD, 2009
- Mancos Source Water Protection Plan, CO Rural Water Association, March 2009
- Mancos Rapid Water Assessment, March 3008, NRCS
- Investigation of the Embedded Cobble in the Mancos River, Mesa Verde National Park
- Colorado, January 2008, Northern Arizona University
- Functional Assessment of Mancos River Watershed, April 2007, Univ. of New Mexico

Through these assessments, we identified critical information needs to fully complete a SMP in Phase II and integrate an effort for environmental and recreational values. Specifically, we have identified a need to: (1) protect current water rights while exploring options for more effective and efficient water delivery and use, (2) assess the vulnerability of the watershed to wildfire and other climate impacts, (3) refine our understanding of river hydrology to better manage instream flows for both aquatic organisms and human use, and (4) coordinate continuous monitoring to support adaptive management across the watershed. This proposal will support this effort and help guide the identification and need for additional data-collection efforts and alternatives to lead to the creation of a community-driven, data-informed Mancos Watershed Stream Management Plan.

Multiple Objectives of the Project. The Mancos Watershed Group membership is a diverse collective of famers, ranchers, nonprofits, agencies, managers, tribes, and concerned citizens who have partnered together to improve the health of the Mancos River since 2006. This project incorporates a multiple objective framework for integrated watershed management incorporating the planning needs of Jackson Gulch Reservoir, Mancos Water Conservancy District, Town of Mancos, Mesa Verde National Park, and the Ute Mountain Ute Tribal Park. Across the 1l6 miles of the watershed the following objectives to be addressed include: continued stakeholder engagement and education (Task I); hydrology and water supply delivery improvement (Task II), ; fish migration improvement and future habitat needs (Task II); watershed-wide assessment of vulnerability to fire and climate change (Task III); recreation opportunity enhancement within the Town corridor (Task IV); Finally, Task 5 will provide a comprehensive Mancos Watershed Stream Management plan with the goal of providing a coordinated approach to adaptive management across the basin. Results of the Mancos Watershed Stream Management Plan will simultaneously achieve the goals of Colorado Water plan, Southwest Basin Roundtable Implementation Plan, Mancos River Drought Resilience Strategy, Mesa Verde National Park river restoration plan, Ute Mountain Ute Tribal park Management plan, and Colorado Parks and Wildlife fish management for the Mancos River.

Monitoring and Implementation. We define success for the Mancos Watershed Stream Management Project as developing a large landscape, cross-boundary Mancos River Stream Management plan to guide coordinated implementation across diversity of land owners and interests. In Phase II, this planning effort will measure success of its objectives by multiple metrics. We will measure the successful completion of the deliverables identified in the attached Scope of Work; the number of stakeholders and diversity of interests engaged in the process; development of a coordinated multi-agency monitoring plan; and the goal of integrating projects and actions identified to achieve multiple purpose objectives are incorporated into at least one additional partner planning effort.

Attachments

A - Scope of Work, B - Mancos Watershed Group, C - Map of Project Area, D – Town of Mancos Recreational Improvement Report (Phase I), E - Detailed Project Budget and Timeline, F - Agriculture and Stream Management Plan Workshop Action Plan, G – PL566 Documentation, H - Letters of Support

Attachment A

Scope of Work

GRANTEE and FISCAL AGENT: Mancos Conservation District

PRIMARY CONTACT: Gretchen Rank

ADDRESS: PO Box 694, Mancos, CO 81328

PHONE: (970) 533-7317

PROJECT NAME: Mancos Watershed Stream Management Planning Phase II

GRANT AMOUNT: $596,000

INTRODUCTION AND BACKGROUND

The Mancos River watershed hosts a diverse group of water users; agricultural producers, the Town of Mancos, recreational water users, Mesa Verde National Park and the Ute Mountain Ute Tribe all rely on this water for their livelihoods. There are close to fifty ditches that all divert water for various beneficial uses along the Mancos River and its tributaries. Within the watershed there are numerous small reservoirs mixed in with a slew of water rights from the 1800's all the way to present day filings.

Drought and climate change are impacting southwest Colorado. Montezuma County has experienced abnormally dry conditions within the last year and Colorado is likely to continue experiencing climate related stressors, such as drought, wildfire, and catastrophic flooding. Proactively taking steps toward protecting agricultural, municipal, environmental and recreational uses of Colorado's water is imperative to maintaining river health and a viable agricultural industry in the face of these changes.

Assessing the potential for and consequences of fire in the Mancos River Watershed supports maintenance of agricultural viability and the goal of providing safe drinking water to the community and visitors. Collecting additional data about instream flows, improving our understanding of Mancos River hydrology, developing an Urban Water Conservation Plan, investigating more efficient ways to track water usage, and addressing historical dry up points would all help better manage the flows in the river. This project supports the critical goals of maintaining a resilient natural environment and protection of watershed health, environmental water needs and recreation, specifically helping to maintain, protect and enhance recreational values and improve the condition and natural functions of the West Mancos River and associated riparian areas and helps ensure that the Mancos Watershed remains resilient in the face of natural disasters and climate change.

OBJECTIVES

Phase II Objectives:

1. Regularly convene the Mancos Watershed Group, Technical Team and Mancos River Agricultural Committee to direct the stream management plan process (Task I)
2. Collaborate with the local community, stakeholders and the Town of Mancos Visioning Committee to create robust outreach and education campaigns centered around the upper Town of Mancos reach recreational stream improvements, urban water conservation and water quality in the Mancos Watershed (Task I)
3. Work with consultant to develop better understanding of Mancos River hydrology using additionally refined models and additional scenarios, in addition to model refinements and legal

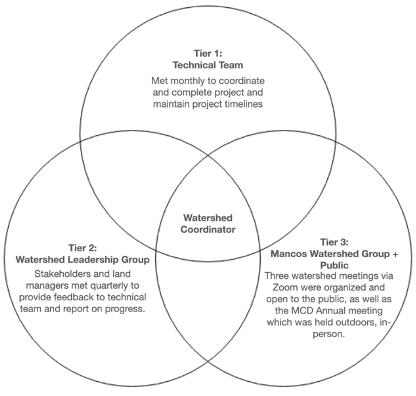
opportunities for management options from Phase I, Task II, to identify specific opportunities and priority reaches for and implementation of management options or actions that private landowners or land managers can collectively take to improve river health and flows (Task II)
4. Use monitoring and assessments to quantify minimum flows needed for fish, quantify agricultural water use and how it impacts flow patterns, and address historical dry up points to make plans for flow and river health improvements (Task II)
5. Use modeling to assess vulnerability of the headwaters of the West Mancos Tributary to wildfire and climate impacts to prioritize recommendations for work on forested lands to protect important infrastructure, single viable water source and promote drought resiliency in the Mancos Watershed (Task III)
6. Using project plans developed in Phase I, leverage funding to implement Town of Mancos stretch improvements (Task IV)
7. Create a community-driven, data-informed Mancos Watershed Stream Management Plan for continued monitoring, protection and restoration of the agricultural, environmental, and recreational assets in the Mancos River watershed (Task V).

TASK I: Stakeholder Engagement and Education

Description of Task

The Mancos Conservation District has helped lead the creation of a local Stream Management Plan to better understand the needs and future desires of the water managers and land owners in the watershed. This continuing effort, led by agricultural producers and the Mancos Watershed Group, has uncovered physical needs in the river and management changes that may greatly improve the drought resiliency of the whole watershed. Phase I of the SMP indicated that a robust education program with an effective outreach strategy is needed and has been requested for the objectives and goals of Phase II. This program will address a multitude of issues that were brought to the surface during Phase I and have been further compounded by new land owners and subdivided properties.

The need for information and engagement surrounding the understanding of hydrology and water management options was highlighted in Phase I. Stakeholders have requested the following topics be included in Phase II of the program: ditch operations and the differences with running an open ditch compared to a piped system, ditch and individual member management, including management of lateral ditches, how to strategically call for supplemental water, general water law, minimum flows to overcome losses, and pooling agreements. These ideas could be facilitated with a model such as the Bureau of Reclamation's water model in Denver or a similar traveling model. Lastly, education surrounding general reservoir management, water storage and releases, priorities of ditches and reservoirs, and calculating losses would greatly aid in managing the river. The more the stewards of the land understand about the resources they manage and are involved in the planning process, the more effective any other systems will be in having the desired outcome.



Method/Procedure

Sub-Task 1.1: Technical Team and Mancos Watershed Group Meetings

Ensuring safe participation from the integral stakeholders and decision makers will continue to be a priority, so the Mancos Conservation District will continue utilizing the tiered approach to stakeholder engagement we developed during Phase I. With

COVID-19 still posing challenges, outreach plans will continue to evolve and be developed for mitigating these challenges and ensuring our stakeholder engagement process continues with full participation.

A. MCD will hold monthly meetings with a core technical team of experts to ensure the project continues moving forward on task and timeline.
    a. Implement consensus-based goals/desired outcomes for environmental and recreational needs identified in Phase I.
    b. Implement existing opportunities related to alternative water management and strategies identified in Phase I with the Agricultural Committee.
    c. Implement coordinated monitoring plan
    d. Create outreach campaigns to share and invite feedback on Phase I findings and Phase II efforts to assess and characterize the Mancos Watershed.
B. MCD will hold quarterly meetings with the Mancos Watershed Group Leadership Team to provide feedback to the technical team on progress and overall SMP outcomes, in addition to:
    a. Identifying existing opportunities related to alternative water management and strategies in the Mancos River Watershed
    b. Continue identifying consensus-based goals/desired conditions for environmental and recreational needs.
    c. Develop a coordinated monitoring plan
    d. Share and invite feedback on the findings from recent efforts to assess and characterize the watershed
C. MCD will hold three public meetings between the Mancos Watershed Group and the public to engage the public, share progress, and solicit feedback on the overall process and project outcomes.
D. MCD and watershed partners will present at six events on the local, state and national level relaying lessons learned and our approach to Stream Management Planning and Watershed Resilience.

Sub-Task 1.2: Develop Mancos River Agricultural Committee (MRAC)

As of the 2017 Census of Agriculture, Montezuma County was home to 446 cattle farms and the Mancos River Watershed contains 11,300 acres of irrigated land. While cattle and hay production are the dominant types of agriculture in the Mancos Conservation District, in recent years there has been an increase in the number of small farms that are raising produce. The 2021 irrigating season in the Mancos Valley was an extremely challenging year for many farmers and ranchers. Adjudicated water from river flows was very limited and due to low storage; for the first time in memory, Jackson Gulch Reservoir did not release any water for supplemental irrigation. The Mancos Valley sees very high variability in the natural flows in the Mancos Watershed and relies heavily on surface water to irrigate the land used to farm and ranch. In 2019, the Mancos Conservation District conducted a survey of landowners in the Mancos Valley to identify water related values and concerns. The resulting Concern Gathering Report identified that the primary concerns of landowners in the Valley revolve around drought, water supply, climate change, and the effect of misinformation and lack of education exacerbating water shortages. Incorporating the interests and concerns of agricultural producers into the SMP is a vital component of the stakeholder engagement task.

A. MCD and watershed partners will continue to identify key agricultural water users in the Mancos Valley who have an interest in helping guide the stream management planning efforts and prioritize actions.
B. MCD will convene a new Mancos River Agricultural Committee (MRAC), headed by the Agricultural Outreach Coordinator, that will represent the interest of the agricultural water users

to ensure that key water users will have a voice at the meetings and the SMP will receive valuable reporting and feedback needed to develop the Mancos Watershed Stream Management Plan.

C. MCD, in partnership with the MRAC and other watershed partners, will develop and facilitate agricultural workshops addressing topics requested by stakeholders in Phase I, such as ditch operations and the differences with running an open ditch compared to a piped system, ditch and individual member management, including management of lateral ditches, how to strategically call for supplemental water, general water law, minimum flows to overcome losses, and pooling agreements.

Sub-Task 1.3: Further Outreach and Planning for Downtown Mancos Reach Recreational Improvements

Despite the challenges faced due to COVID-19, MCD had great success in connecting Town residents, local businesses, and the Mancos High School chemistry class to our current work on the river during Phase I outreach efforts. MCD also partnered with the Mancos Watershed Film Festival and over 200 attendees to raise cash match for that project. During Phase I, MCD attended multiple workshops and field tours with Town of Mancos Trustees and developed a partnership for addressing Watershed Health and Town recreational opportunities. Continued engagement with the Town of Mancos is needed to ensure the community continues to be involved with the project.

A. The MCD will conduct further outreach to private landowners who have riverfront property through the Town of Mancos
B. The MCD, Alpacka Rafts Co. and additional stakeholders will conduct specific outreach for the furthest up-stream reach of the recreational proposal from Phase I to refine the proposal, budget and ensure the full scope of recreational values are addressed.
C. The MCD will partner with the Town of Mancos by participating in the Town of Mancos Visioning Committee, working to create a more robust plan for the Town of Mancos Parks and Recreation Plan and River Reach.
D. The MCD and watershed partners will convene quarterly meetings to address the completed Phase I concept proposal to involve the community and landowners in planning and implementing improvements to the three parcels.

Sub-Task 1.4: Urban Water Conservation Engagement

The water in the Mancos River is a vital commodity to everyone in the desert southwest. The Mancos River supports the entire Mancos community in a variety of ways and contamination of this vital water source would be catastrophic to the community that relies so heavily on it. Municipal water users rely on water from the Mancos River and can play a large part in the conservation of water. Ensuring that everyone in the Mancos Valley has access to local, clean and affordable water is imperative and the responsibility of everyone in the community, especially in light of the changing climate and likelihood of hazardous events, which Mancos Watershed residents are vulnerable to.

A. The MCD has secured an AmeriCorps VISTA member to engage the local community about the importance of water to our community
B. The MCD will work with the AmeriCorp VISTA member will work with the Watershed Coordinator to analyze water quality data, to ensure data is shared with CDPHE and CPW RiverWatch Program, and create a water quality outreach campaign for the local Mancos community regarding the quality of the water in the Mancos River.

C. The MCD will work with the AmeriCorp VISTA member to create a call-to-action surrounding urban and other water conservation and the restoration of the Mancos River and riparian corridor, to support a healthy and consistent water supply.

Sub-Task 1.5: Implementation of Outreach Campaign on Water Quality Conditions in Watershed

The entire Mancos Valley relies on the water in the Mancos River for everything from agricultural and municipal use, to environmental and recreational use. Southwest Colorado is currently suffering the effects of climate change and drought, which have the potential to impact the water that is the lifeblood of the Mancos Watershed. Monitoring and protecting the quality of the water in the Mancos River and its tributaries is imperative to the well-being of the community. The MWG has made a concerted effort to collect water quality data for the streams in the Mancos Watershed and create a coordinated monitoring strategy.

A. The AmeriCorp VISTA member will work with the MCD and watershed partners to engage the local community in order to evaluate community water quality priorities and identify gaps in water quality education and outreach.
B. The MCD will work with watershed partners to organize and implement a community event centered around the importance of water quality to the community. This will be in the form of an event, such as a water festival, a presentation, a workshop or some combination.

Deliverables

A. The MCD will convene monthly Technical Team Meetings, up to six meetings of the Mancos Watershed Group Leadership Team, and three Mancos Watershed Group presentations on project progress, including public access to all materials and recordings via the MCD website
B. The MCD will incorporate summaries of feedback and ideas from the Mancos River Agricultural Committee will be provided for all relevant tasks, including how that feedback is incorporated into final deliverables
C. The MCD will provide summaries of feedback and ideas from Town of Mancos residents for all relevant tasks and how that feedback was incorporated into final deliverables
D. The MCD will collaborate with watershed partners to produce consensus-based plan objectives and goals/desired conditions
E. The MCD, AmeriCorp VISTA and watershed partners will create an urban water conservation and watershed condition outreach campaign with supporting materials
F. The MCD, AmeriCorp VISTA and watershed partners will create urban water conservation and watershed condition community event

TASK II: River Health and Flow Improvements

Description of Task

Drought and climate change have both historically and recently impacted Southwest Colorado. While impacts of the current drought are still being assessed, droughts of these levels have historically impacted the area by reducing flows in rivers and reducing reservoir storage. Drought has the potential to impact the Mancos Valley by decreasing the overall amount of water and by changing the timing of runoff. Understanding and improving flow patterns, including the diurnal fluctuations of the river caused by snowmelt and freezing in the high country in the watershed have the potential to support not only the

municipal, agricultural and recreational water users in the Mancos Valley, but also the health and wellbeing of the riparian ecosystem as well.

The need for better understanding river losses and gains was illustrated by the 2021 anomaly where there was no lake water at all to supplement irrigation. This should have been disastrous. While there was very little water overall, the water that was there was so simple to manage that for those users who were in priority, it was one of the best, most trouble free, irrigation seasons ever. The daily fluctuations in river flows were smoothed out almost completely by the simplicity of the situation. Whereas in a 'normal' year, lower ditches, while senior in priority, catch much of the up and down fluctuations in flow volume and have no water at some point almost daily. Understanding how the river fluctuates, and possibly timing reservoir releases has the potential to decrease fluctuations making flows steadier for the entire river. Better understanding how to translate the good parts of a very tough year into future years could have an incredible impact on management.

Many of the sub tasks in Task III are a combination of needed infrastructure and management changes that have the potential to greatly increase the drought resiliency of the Mancos watershed, aid agriculture, and create great opportunities for strategies that work with nature rather than against it to ensure a healthy riparian ecosystem.

Methods/Procedures

Sub-Task 2.1: Quantify Minimum Flows for Fish

Stream flows are a critical part of aquatic and riparian ecosystems, and it is important to balance human uses of water, with needs of the environment. The R2Cross Method uses data collected in the field including discharge, channel morphology, and pebble counts to model three hydraulic parameters: average depth, average velocity, and percent wetted perimeter. These parameters are used to develop recommended minimum flows required to maintain suitable habitat in the river for fish and macroinvertebrates. The Tennant Method is an alternate approach that can be used for development of minimum flow recommendations when streamflow gage data is available. In 2020 the Wilson Water Group used the Tennant Method to identify minimum flows for six currently and historically gaged sites on the Mancos River.
Several species of warm water fish are found in the Mancos River, including Bluehead Sucker (*Catostomus descoblus*), Flannelmouth Sucker (*Catostomus latipinnus*), and Roundtail Chub (*Gilia robusta*). These fish are known as the 'three species' and are identified as species of concern by the State of Colorado. Habitat requirements for the three species differ from requirements for cold water fish species, and may not be accurately estimated through standard R2Cross analysis methods.
The MCD conducted R2Cross surveys at seven sites on the Mancos River and tributaries, including four that were part of Wilson Water Group's Tennant analysis in Phase I. This data needs to be analyzed to improve understanding of the hydrology of the river, and particularly how it pertains to the three species. Additional surveys need to be conducted on streams without a gaging history to provide information about the hydrology of these important streams.

A. The MCD's technical team will choose 6 to 9 sites on Mud, Chicken, and Weber Creeks and will perform R2Cross surveys at each of these sites.
B. The MCD will integrate results from R2Cross surveys with the Wilson Water Group's Tennant Method analysis to develop a set of recommended minimum flows for sites where sufficient streamflow gage data are available.
C. The MCD will utilize data from R2Cross surveys and consultation with fish biologists to estimate minimum flows suitable for the three important warm water fish species.

Sub-Task 2.2: Improve Understanding of River Hydrology and Policy, Legal Framework Options

In 2018-2019, MCD contracted Wilson Water Group (WWG) to refine the Mancos River representation in the State of Colorado's Decision Support System (CDSS) models to provide more detail in the Mancos River Basin, specifically for use in understanding smaller tributary flows, ditch-to-ditch interactions, and "what-if" scenarios on a stream reach scale. The results of this work are presented in the 2019 "Mancos Watershed Drought Resilience Planning: Basin Characteristics and Model Development" Report and reflected in the model representation of the basin.

Task III will build on the 2019 report and work done in Phase I, to expand the model to address the additional dry year that 2021 provided, understand how subdividing land has impacted water deliveries, and explore the feasibility of ideas/options for improving flow in the Mancos River.

A. WWG will provide four additional model scenarios, including brief documentation and graphs, and a presentation of the models.
B. WWG will investigate calibration needs for Chicken, Mud, and Webber Creeks
C. WWG will update the 2019 model through 2021 to capture another dry year, along with the 0 allocation from Jackson Gulch Reservoir and provide more accurate modeling of how drought affects the watershed
D. WWG will participate in 8 to 12 meetings to discuss the SMP options and progress
E. WWG will investigate issues to help understand how subdividing land in the Mancos Valley has affected water delivery.
F. WWG will investigate the options, issues, and pros/cons of pooling smaller-user water requests for reservoir deliveries.
G. WWG will use metering information to investigate Jackson Gulch Reservoir delivery times and losses, including options to optimize deliveries.
H. WWG will complete two in-person presentations of findings and modeling to the Mancos Watershed Group

Sub Task 2.3: Development of Water Quality and Town Urban Conservation Program

Water quality, quantity and timing affect all water users, including municipal water users. Poor water quality and reduced water quantity have the potential to impact municipal water users and increase the complexity of providing safe water to people of the Mancos Watershed. Ensuring that everyone in the Mancos Watershed has access to local, clean and affordable water helps enable community members to meet their household needs affordably.

A. The MCD will work with watershed partners and volunteers to continue its coordinated monitoring program by continuing to collect water quality data to ensure continued monitoring of the Mancos River
B. Colorado River Watch and Sonde unit data collection will be continued, and the MCD will work with an AmeriCorp Vista to recruit five additional volunteers
C. The MCD will analyze the water quality data collected, to ensure data is shared with CDPHE and CPW RiverWatch Program, the Mancos Watershed Group and the Mancos community regarding the quality of the water in the Mancos River.
D. The MCD will create a portfolio of outreach materials that can be easily edited and updated to continue educating and engaging the local community. These will include social media campaigns, brochures, digital information, and regular updates to our SMP and water quality website pages.

E. The MCD will work with and provide support for the Ute Mountain Ute Tribe and the Department of Reclamation Mining and Safety on their WIIN and Thunder Mine Remediation and Metals Source Study.

Sub-Task 2.4: Mancos River Diversion Metering Project – Prediction for Timing Releases from Jackson Reservoir

The 2021 irrigation season in the Mancos Valley was an extremely challenging year for many farmers and ranchers. Adjudicated water from river flows was very limited and due to low storage; for the first time in memory, Jackson Gulch Reservoir did not release any water for supplemental irrigation. The Colorado Department of Water Resources' Water Commissioner expects to see priority and flow changes in the Mancos River daily and spend a great deal of time locating the water when there is any type of management change on the river. Many of the irrigators, land owners, lake managers, ditch riders and other water managers all feel that being able to read and record the flows at many or all of the diversions along the river will generate much of the needed information to better manage this complex system. Better management of the river, including timing of reservoir releases and monitoring usage, may help decrease streamflow fluctuations and improve instream flows for aquatic organisms, allowing the community to better protect this vital resource.

A. The MCD and MRAC will coordinate with Mancos Valley ditch companies to find innovative solutions to increase the efficiency of water delivery to agricultural users in the Valley to support a more efficient, drought resilient water delivery system.
B. The MCD and MRAC will collaborate with local ditch companies to support the creation of a remote metering network, composed of water meters and data loggers on flumes and weirs, all transmitted at frequent intervals to a central website.
C. The MCD will facilitate the installation of equipment that will utilize a local cell network to allow future cross-brand compatibility.
D. The MCD will continue to work with the MWCD and the DWR to connect this data in real time to analyze stream flow alongside our water quality data.

Sub-Task 2.5: Addressing Historical Dry Up Points

Understanding water loss patterns, such as where the river tends to dry up, and the timing of water changes, in the entirety of the Mancos River and its tributaries would greatly aid in managing water. Understanding where water will disappear and where it will reappear and when is a powerful tool for river planning and even day to day usage. This would allow for a more comprehensive plan to be made for riparian vegetation to best balance bank stability, shading, and an overgrowth of canopy cover. The MWCD manages Jackson Gulch Reservoir to help reduce massive diurnal swings to aid water users. The timing of release changes and snowmelt peaks greatly alters daily river operations. Understanding how diurnal fluctuations in flows affect irrigation diversions is needed and would greatly benefit all river management by potentially expanding water availability through the year and by potentially increasing instream flows throughout the watershed. More water for longer periods would likely benefit all users and the entire riparian ecosystem as a whole.

A. The MCD and MRAC will conduct a loss study to address the timing of water flow in the Mancos River, in addition to noting points where the river tends to dry up.
B. The MCD and MRAC will collaborate with landowners and other watershed partners to explore water pooling ideas presented by landowners during outreach from Phase I of the project.
    a. Ditch pooling - a ditch or lateral as a whole entity calling for a set total volume, rather than individual water users calling for water independently.

b. User pooling - individual water users contributing individual lake water allotments to a pool managed by the MWCD. In effect, a user would be simplifying their part of the system: instead of managing adjudicated and lake water individually, they would be managing adjudicated water as a user pool.

C. The MCD and MRAC will explore the idea of supporting a drought resilient landscape by
   a. Undertaking soil studies and modeling to understand current soil types and how they may affect the recharge of groundwater, helping to create a stable ecosystem capable of withstanding dramatic yearly changes in water availability.
   b. Explore projects and legal options for slowing the passage of water by filling the local shallow aquifer or soil profile in order to allow water to filter through the system to return to the river at a later time.

Deliverables

- The MCD will provide summary reports for each site where R2Cross surveys are performed outlining findings of surveys and implications for instream flows
- The MCD will compile a report estimating minimum flows suitable for the three important warm water fish species.
- WWG will deliver an updated report and additional model scenarios that will reflect the extension of the model through water year 2021, to help understand how drought affects the Mancos Watershed; they will complete two in-person presentations.
- WWG will provide memos outlining the effects of subdivision on water delivery, options for pooling water, and recommendations for optimizing water deliveries from Jackson Gulch Reservoir.
- The MCD will produce reports summarizing the findings of water quality data analysis for the CDPHE, CPW RiverWatch, Mancos Watershed Group and the Mancos Community.
- The MCD will produce a portfolio of outreach and education materials about water quality in the Mancos watershed.
- The MCD will produce summaries of findings regarding exploration of water pooling options and metering options, and how those options will affect the timing of flows in the river.

TASK III: Watershed Health Assessment Including Vulnerability Due to Climate Change

Description of Task

Drought has historically impacted the Mancos Watershed by decreasing hay production, stunting rangeland growth, increasing wildfires, reducing flows in rivers, reducing reservoir storage and changing the timing of runoff. Climate change and drought are projected to impact the water that the Mancos Valley is reliant on for municipal, agricultural, environmental and recreational uses, so incorporating drought resilience strategies into water use and protection is imperative.

Sub-Task 3.1: Drought Resiliency Planning in the Mancos Watershed

The MCD and MWG partnered with MSI through the Bureau of Reclamation's WaterSmart Program to identify and prioritize drought resiliency strategies that align with the community's values. This project promoted drought resilience strategies that support sustaining the fundamental functions of healthy soil and water, protecting and altering infrastructure to adapt to changing conditions, providing base flows and climate refugia for both cold and warm water fishes, and reducing the risk and impacts of severe long-term disturbances in forested areas. These recommendations need to be incorporated into our land management practices.

The MCD is currently working with NRCS on the Pl-566 Watershed Operations Program, which supports the implementation of projects that aim to prevent damage from erosion, floodwater and sediment, and water and land conservation. With drought, often comes wildfire, which can cause severe flooding and sediments in burned areas and areas downstream. The MCD is working to provide the necessary assessments on the West Mancos River Watershed addressing fire-related hazards in order to take proactive measures to protect this valuable watershed. The West Mancos River is the single and sole source of water to the Town of Mancos, Mesa Verde National Park, Mancos Rural Water, and all agricultural adjudicated water for private and tribal lands.

A. The MCD will continue to work with the NRCS to provide the necessary mapping, documentation and feasibility reporting necessary to move forward in the Watershed Operations Program.

Sub-Task 3.2: Beaver or Low-tech Process Based Restoration

The MWG intended to assist watershed managers, planners, and restoration practitioners to explore potential beaver habitat suitability within the watershed, identify opportunities for riverscape restoration or beaver relocation. The MCD has received requests from private landowners to work with CPW for relocation services for beavers in the Mancos Watershed and protect existing agricultural structures and riparian corridors on private lands.

A. The MCD will map current beaver locations and potential future habitat areas.
B. The MCD will develop partnerships for beaver relocation services.
C. The MCD will promote the installation of devices to protect current agricultural structures and riparian corridors.
D. The MCD will determine beaver's or low-tech processed based restoration locations and the ability to create a resilient watershed utilizing these tools.

Sub Task 3.3: Modeling and Assessment of Fire-Related Hazards in the West Mancos River Watershed

The modeling and assessment of fire-related hazards in the West Mancos River corridor was identified as a top priority in the recently completed Mancos Watershed Stream Management Plan Phase I.

The West Mancos River headwaters are in a densely forested area of the San Juan National Forest and from there the tributary flows downstream through parcels of federal, state and private lands (See map submitted in Attachment C). The West Mancos River is critical to providing agricultural, municipal, recreational and environmental water throughout the Mancos watershed. Fire risk modeling completed by the San Juan National Forest and the Colorado State Forest Service show that high severity wildfires in this watershed could have catastrophic impacts, negatively affecting the livelihoods of all of the people in the Mancos Valley. Many highly valued resources and assets supplying water to Mesa Verde National Park, Jackson Gulch Reservoir, the Town of Mancos and Mancos Rural Water are at risk of wildfire. This water infrastructure, including inlets and key diversion structures could be susceptible to the flash floods, and mud and debris flows that are common after wildfire. Water delivered through this infrastructure provides the entire supply for municipal and agricultural water users in the Mancos watershed, and there is not a backup system or alternative sources of water.

The Quantitative Wildfire Risk Assessment (Scott et al. 2013; Gannon 2019a), Risk Assessment Decision Support (Gannon 2019b), and the component Revised Universal Soil Loss Equation (RUSLE) and Fluvial Hazard Zone Delineation (FHZ) models can be used to proactively assess fire related risks to highly valued water resources and assets. Assessing the West Mancos River corridor is a necessary step toward

prioritizing and focusing planning efforts on locations in the West Mancos watershed where actions can be taken to have the largest impact in mitigating negative effects of high severity wildfire and the creation of a drought contingency plan with the goal of protecting the ecological services and agricultural future of the Mancos Watershed.

A. MCD will continue working with the DWRF to update and refine wildfire models to better integrate watershed erosion models with the wildfire risk model. This will facilitate the identification and ranking of key water assets throughout Montezuma County, including the high value assets in West Mancos River.

B. MCD will coordinate with a team consisting of a GIS specialist, a fluvial geomorphologist, and a geologist/hydrologist to complete modeling using the Revised Universal Soil Loss Equation to estimate soil erosion potential in conjunction with the Fluvial Hazard Zone Delineation Protocol developed by the Colorado Water Conservation Board to help identify where pre-fire planning and post-fire triage mitigation activities will be most effective at reducing risk to water quality and water infrastructure.

C. MCD will work with watershed partners to investigate alternative water supply options and backup strategies that could provide water to municipal and agricultural users.

Sub-Task 3.4: Private Lands Outreach Strategy for Forestry

While the West Mancos River headwaters are in a densely forested area of the San Juan National Forest, from there the tributary flows downstream through parcels of land currently managed by federal, state and private partners, opening an opportunity for collaboration with private landowners. Fire mitigation is important along the entire stretch of the river, not just the headwaters, so developing outreach and education campaigns designed to promote partnerships between MCD, the USFS, and private landowners could lead to more effective fire-mitigation efforts watershed-wide.

A. The MCD will create engagement opportunities and educational materials about the benefits of fire-mitigation to watershed health, in order to facilitate partnerships and opportunities for local landowners to incorporate forest health practices.

Deliverables

- The MCD will produce a comprehensive report outlining the high value assets identified, pre-fire planning and post-fire triage mitigation recommendations, and options for alternative water supplies/backups.

TASK IV: Town of Mancos River Improvements for Recreation

Description of Task

The proposed improvements presented in the Phase I report are the first step in identifying the potential for the river corridor for recreation and access through the Town of Mancos. The report presented effective improvement concepts that will transform how the Mancos River is viewed, enjoyed, and in turn protected by our local community. It is our starting point for a more in-depth process of garnering community input on future river enhancements in Phase II. Through our stakeholder outreach we hope to have community and project partners create consensus on future river projects, MCD will then begin the permitting and project funding components. We anticipate that depending on the scope of the project the permitting process can last several months or over a year. Also, some of our improvements are proposed

on private property, legal permission has been granted by a number of the landowners but further outreach by parcel is needed. The watershed driven Mancos River Stream Management Plan has positioned this project favorably with grant opportunities from state and federal agencies. After implementation, a commitment to sustained success of the project through a modest maintenance budget on the local level is being discussed by the Town of Mancos and MCD partnership.

Method/Procedure

Sub-Task 4.1: Leverage Federal Funds

MCD is currently working with local, state and federal NRCS representatives to the PL-566 funding opportunity open to taxing authorities and creating the opportunity for cost share dollars for recreational and environmental projects on the watershed level. MCD is also currently pursuing USDA dollars for projects that address tourism related to recreation and environment. The continued development of stakeholder outreach, education and project scoping is vital to these funding opportunities.

A. The MCD will collect additional private landowner support.
B. The MCD will utilize stakeholder outreach work with River Bend Engineering on final engineering and design for project implantation.
C. The MCD will continue to work with the NRCS PL-566 Watershed Operations Program, in addition to applying for additional federal funds to finance recreational and environmental projects at the watershed level.

Deliverables

- The MCD will finalize engineering and designs for all three parcels.
- The MCD will procure letters of support/grant funds supporting the Town of Mancos Improvements

TASK V: The Mancos Watershed Stream Management Plan

Description of Task

The goal of the Project is to create a community-driven action plan for continued monitoring, protection and restoration of the agricultural, environmental, and recreational assets in Mancos River watershed. The Mancos Watershed Stream Management Plan will be developed using the information collected during Phase I and Phase II of the project to support collaboratively-identified goals informed by stakeholder input. Overarching goals that have been identified so far throughout the process include:

- Ensure the protection of the current water rights
- Continue outreach, engagement and education campaigns with Town of Mancos residents, agricultural producers and the Mancos community
- Prioritizing river health and dedicating time to understanding river flow patterns and ways to improve flow for the benefit of all
- Assessing watershed health in relation to adaptive capability to drought and climate change.

The Mancos Watershed Stream Management Plan will use biological, hydrological and water quality data collected to identify and prioritize management actions that help the land managers and the Mancos Watershed reach these goals.

Method/Procedure:

A. In year one, the MCD will
    a. Work with the Mancos Watershed Group, and the Mancos River Agricultural Committee to prioritize long-term goals and objectives of the Mancos Watershed Stream Management Plan
    b. Create outreach and educational materials focused on generating additional interest in and soliciting feedback on the Mancos Watershed Stream Management Plan.
B. In year two, the MCD will incorporate stakeholder feedback and ongoing data collection and analysis to refine long-term goals and objectives and prioritize management actions that help land managers and the Mancos Watershed reach those goals.
C. In year three, the MCD will write the Mancos Watershed Stream Management Plan and submit it for critical feedback and review, before the final Plan is published.

Deliverable

- The MCD along with watershed partners will produce a final, but living version of the Mancos Watershed Stream Management Plan.

Task VI: Reporting and Final Deliverable

Description of Task

Documentation will be produced throughout the Project to track progress, document changes and adjustments made to the SOW and provide feedback and guidance to MCD, the MWG, MRAC and other stakeholders throughout the process.

Methods/Procedure

A. MCD will provide the CWCB a progress report every 6 months, beginning from the date of the executed contract. The progress report will describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverables

A. At completion of the project, CD will provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs.

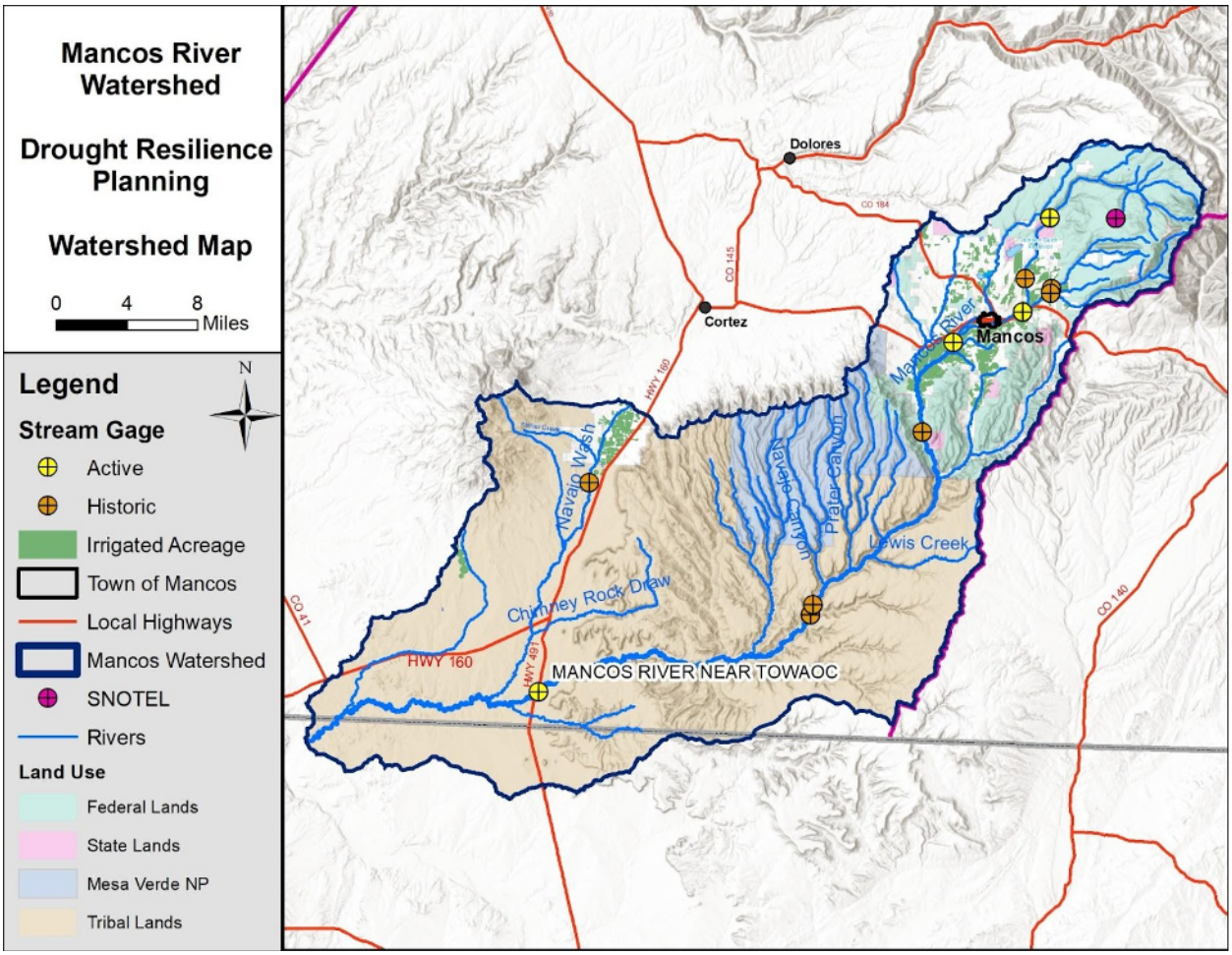
Attachment B

Mancos Watershed Group

Mancos Watershed Group Leadership Team		
Partner Profiles		Acronyms
Gretchen Rank	Mancos Conservation District	MCD
Sensa Wolcott	Mancos Conservation District	MCD
Colin Larrick	Ute Mountain Ute Tribe	UMUT
Jim White	Colorado Parks and Wildlife	CPW
Renee Rondeau	Colorado Natural Heritage Program	CNHP
Drew Spears	Mesa Verde National Park	MVNP
Stephen Monroe	Hydro-Ecologist	
Marcie Bidwell	Mountain Studies Institute	MSI
Scott Roberts	Mountain Studies Institute	MSI
Duncan Rose	Dolores River Anglers Trout Unlimited	DRA
Gary Kennedy	Mancos Water Conservancy District	MWCD
Jimbo Buickerood	San Juan Citizens Alliance	SJCA
Shauna Jensen	United States Forest Service	USFS
Joel Lee	Natural Resources Conservation Services	NRCS
Danny Margoles	Dolores Watershed Resilient Forest Collaborative	DWRF
Ben Wolcott	Mancos River Agriculture Committee	MRAC
Russell Crangle	Department of Water Resources	DWR
Sarah Beth Tingey	Alpakca Raft Co.	
Additional Stream Management Planning Partners and Contractors		
Erin Wilson	Wilson Water Group	WWG
Estella Moore	Colorado Department of Public Health and Environment	CHPHE
Chris Pitcher	Southwest River Engineering	
Tammi Renninger	ElephantFish	

Attachment C

Mancos River Watershed Map



Southwest River Engineering

March 12, 2021

Gretchen Rank
Mancos Water Conservation District
604 Bauer Ave
Mancos, CO 81328

RE: Mancos River Concept Plan

Dear Gretchen,

Southwest River Engineering is pleased to present this concept level plan for recreation and access improvements on the Mancos River through the Town of Mancos. We have compiled concept level improvements and cost estimates for three areas of Town that interface with the Mancos River and define the project area as: the Cottonwood Park Reach, the Mancos School District Reach, and the Downtown Mancos Reach.

The associated cost estimates are reach specific and conducive to a phased implementation. In addition, a total project cost is included if funding and community support warrants. I look forward to working with the collective group to build the community support and keep this project momentum moving forward.

If you have any questions or would like to discuss the plan in detail, please do not hesitate to contact me.

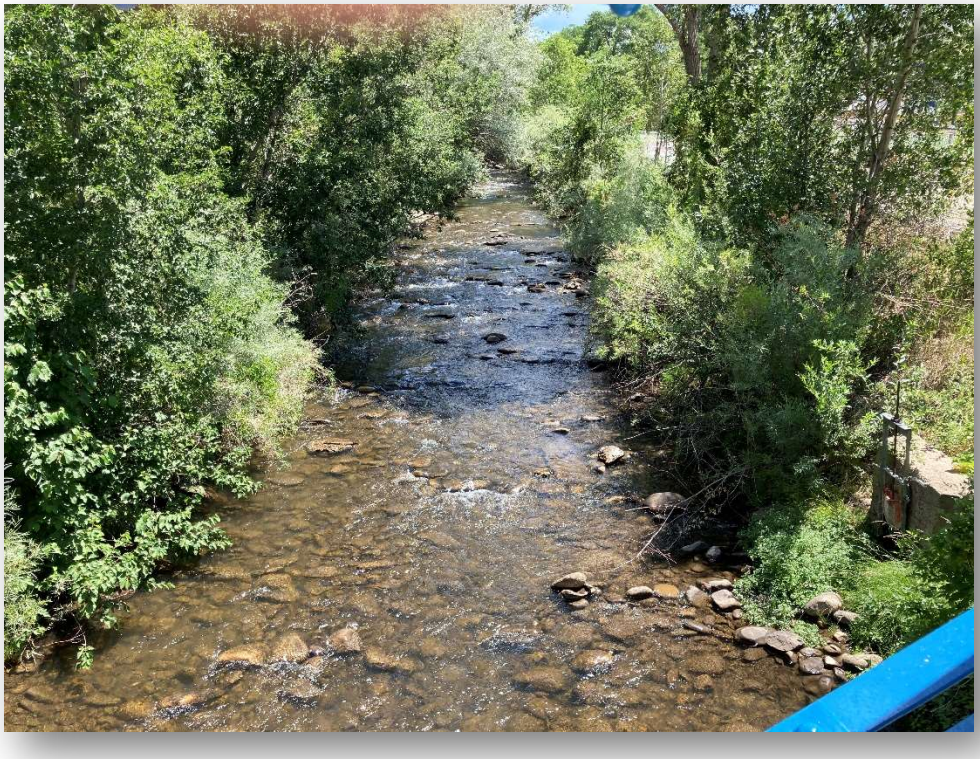
Sincerely,

Chris Pitcher, P.E.

Southwest River Engineering

102 N 3RD ST. POB 5727 • PAGOSA SPRINGS, CO 81147 • PHONE: 970.264.1195 • CPITCHER@SWRIVER.COM

Improvement Concepts
Mancos River
Mancos, CO



March 2021

Report Prepared for:

Mancos Water Conservation District
604 Bauer Ave
Mancos, CO 81328

Report Prepared by:

Southwest River Engineering
102 N 3rd St. POB 5727
Pagosa Springs, CO 81147

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Mancos Watershed Stream Management Plan

In 2015, the State of Colorado adopted Colorado's Water Plan (CWP), a water management guide to help facilitate the balance of a strong economy, sustainable municipal water use, productive agriculture, a healthy riparian ecosystem, and a vigorous recreation industry. The Colorado Water Plan is a guiding mechanism to identify goals and actions to maintain current and future water needs for all of Colorado's water users. The Stream Management Plan (SMP) is a framework within the CWP that communities can apply, at a watershed scale, to accomplish the same goals locally. The Mancos Watershed Plan completed in 2011 is well suited to incorporate the SMP framework as a measurable way of meeting CWP goals for environmental, recreational, and watershed health projects. This report is one component of the overall SMP for the Mancos watershed that is focused on assessing recreational and environmental opportunities throughout the Mancos watershed with an initial focus within the Town of Mancos.

Watershed Flow Analysis

Then Mancos watershed above town is approximately 72 square miles. The watershed annually produces on average 25,000 acre feet of water through the Town of Mancos. A majority of this flow is a result of snowmelt in the months of April, May, and June. In the last decade the average flow rate of the Mancos River has been highly variable. It is expected this variability will continue in the future.

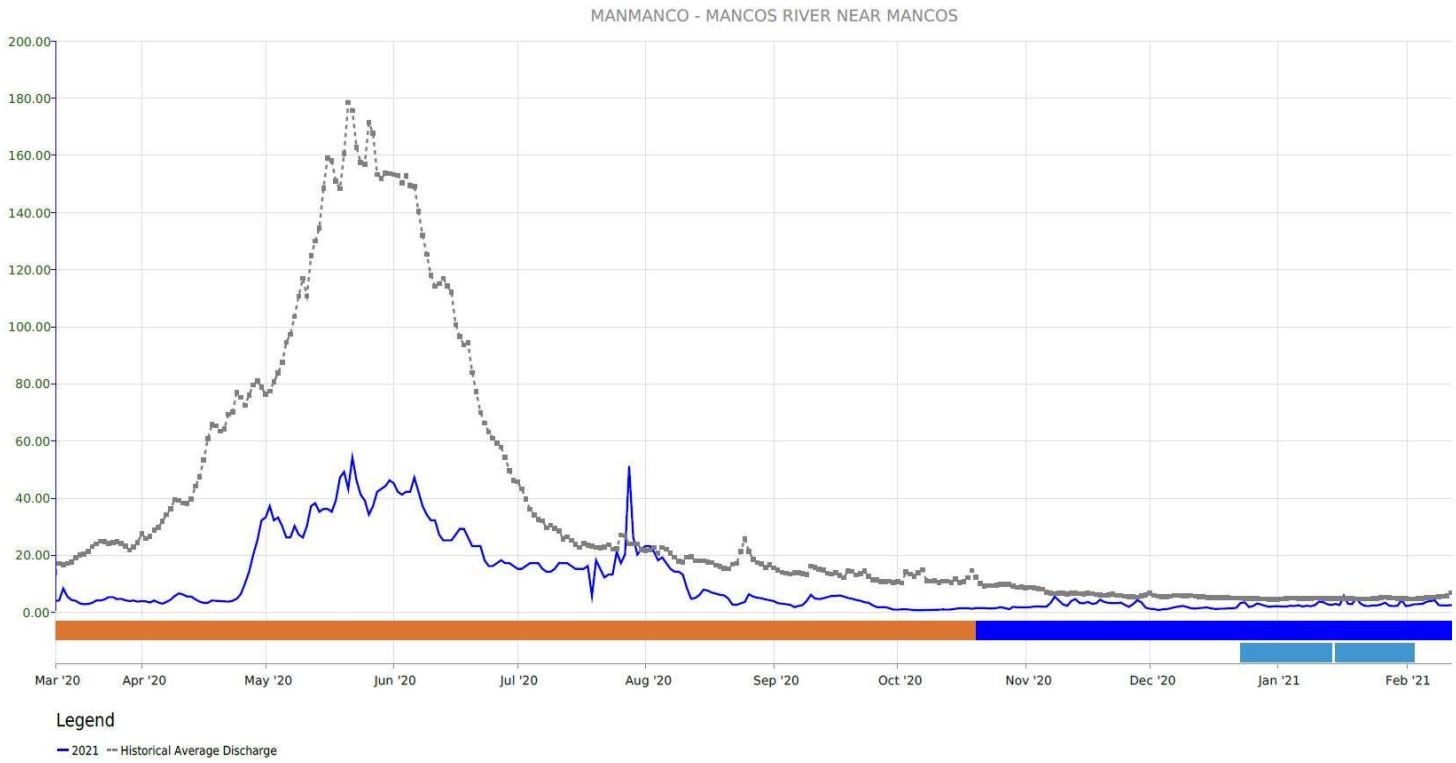


Figure 1. Historical average discharge and current year discharge for the Mancos River near Mancos.

As can be seen from Figure 1, the spring of 2020 was a relatively low flow year compared to the historical average. Even with the drought conditions, there was a minimum, on average, of approximately 20 cubic feet per section (cfs) flowing through Mancos from May until August 2020.

Photo 1. Mancos River at Cottonwood Park.
Note: Hand placed cobble during low flow conditions to create pool for swimming (Flow ≈18 cfs).

A flow of 20 cfs in the Mancos River is sufficient flow to sustain a sport fish population as well has provide floating recreation opportunities with some minor channel modifications. Modifying the low flow channel would increase channel depth and decrease channel width, which will in turn, reduce temperatures and decrease overall evaporation. The proposed work in this concept plan would in no way reduce the flows in the Mancos River.

The project area for the Town of Mancos study was divided into 3 Reaches; The Cottonwood Park Reach, the Mancos School District Reach, and the Downtown Mancos Reach. An overview map of the project area is presented below.

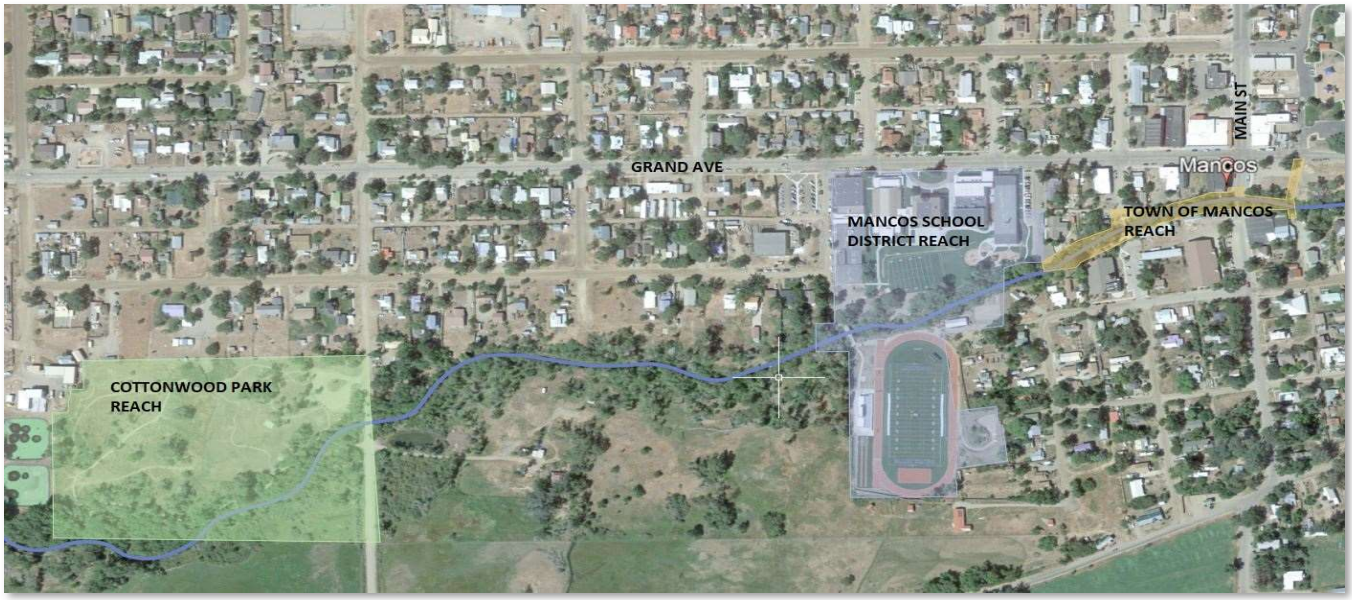


Figure 2. Mancos River Recreation and Access Plan Parcels.

This report will focus on identifying the current conditions, site constraints, enhancement opportunities, and a preliminary cost estimate for the proposed improvements. Within the body of this report are example concept plans for each reach and cost estimate summary for each reach.

Appendix A is a complete plan set of the proposed improvements for the three locations. Appendix B gives a detailed break down of the preliminary cost estimate for each location. This should be helpful in phasing the project if needed. In addition, Appendix C gives a complete project cost estimate if funding is available to do all of the proposed improvements at one time.

Cottonwood Park Reach

Existing Conditions

Cottonwood Park is located on the southwest side of the Town of Mancos. The 13-acre park features large open fields adjacent to a very well vegetated riparian corridor. The park is primarily used as a dog park but is also enjoyed by many members of the community in a myriad of ways. The park has a variety of trails that follow the Mancos River and divide the upland floodplain. The riparian corridor has the feel of a natural remote space, yet it is adjacent to the more settled feel of the Town of Mancos. The park is bordered by the Town of Mancos Waste Water Treatment facility to the west, The Double J Ranch to the south, eight individual city lots to the north, and Spruce Street to the east. An overview map of Cottonwood Park is shown in Figure 3.

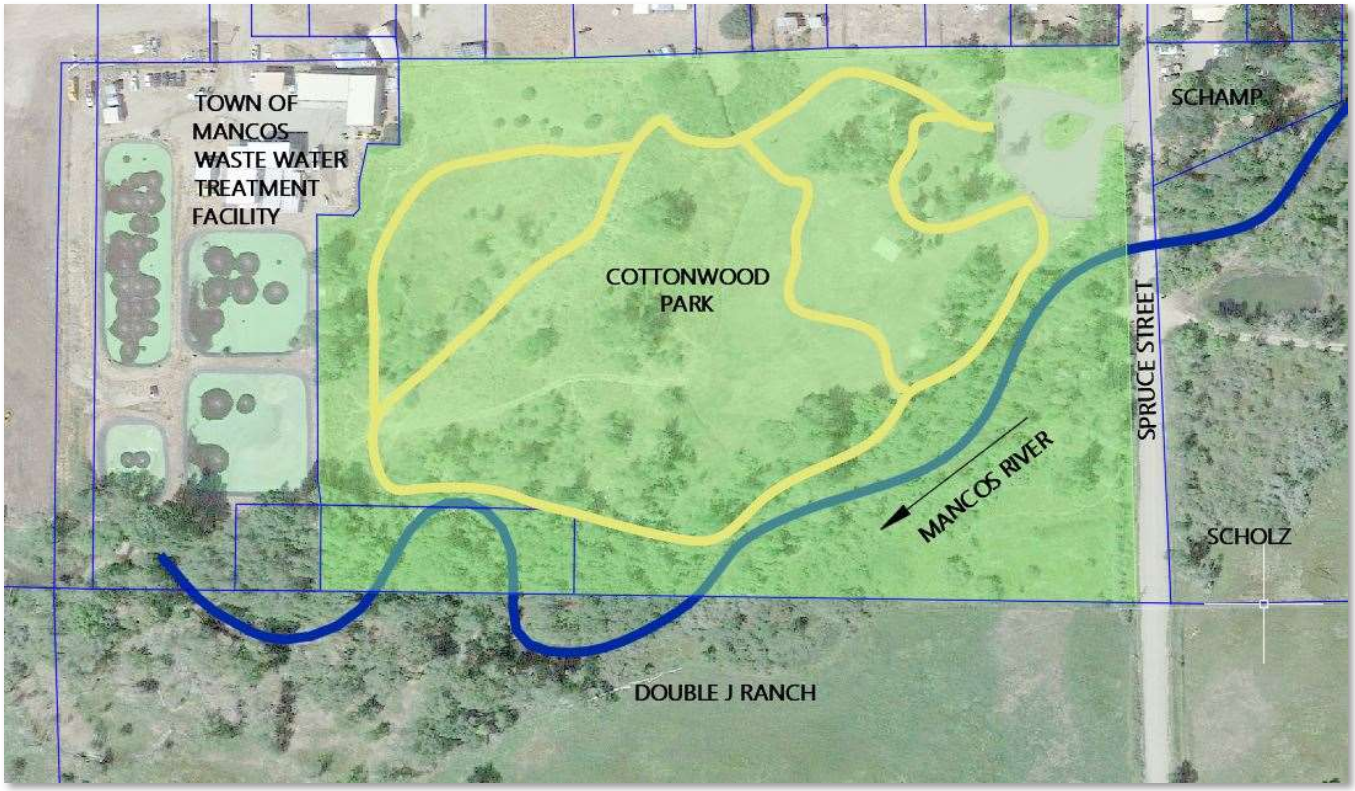


Figure 3. Cottonwood Park Overview.

Current River Access

Access to the Cottonwood Park is primarily through the parking lot and its internal trail network. Several un-improved primitive trails continue down to the water's edge throughout the park on the north side of the river. A small portion of the river extends into the adjacent private property to the south for approximately 150 feet and then returns back into the Cottonwood Park parcel. In addition, there is a small vehicular access road located in the southwest corner of the park off of the west side of Spruce Street. This access point terminates on the south side of the Mancos River approximately 150 feet downstream of the Spruce Street Bridge.

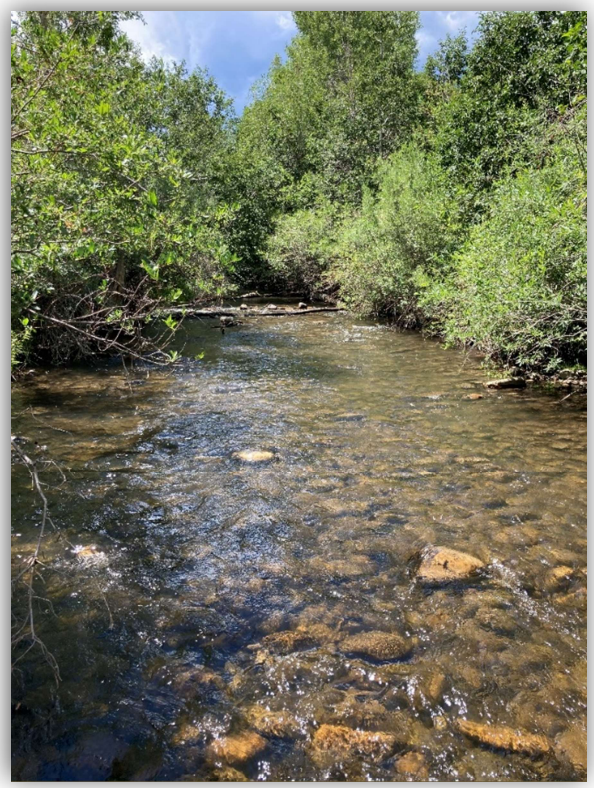


Photo 2.
Cottonwood Park stream section.

Photo 3.
Chokecherry bush Mancos River.

Photo 4. Un-improved access point with active erosion and steep bank.

Photo 5.
Cottonwood Park Riparian Vegetation.

Stream Geomorphology

The Cottonwood Park Reach of the Mancos River is slightly incised but has a strong vegetated stream bank with healthy riparian canopy and marginal connection to the floodplain. The average width to depth ratio is near 30. This Reach of the Mancos River has an increased horizontal extent that allows for a wider belt width and increased sinuosity. The overall slope through this section is approximately 1.5% and approximate bankful width of 25 feet. A natural pattern of riffles and pools exist as well as locations of good quality aquatic habitat. The streambed is mostly medium size cobble and gravels. Overall, the Mancos river in this section is relatively stable and appears to be adequately moving sediment through the system during channel forming flow events. Of the areas evaluated in this report, the Cottonwood Park Reach has the closest characteristic of a 'reference reach' practiced in stream geomorpholgy. Uforturnately other reaches included in this report do not have the space requiremetns to emulate this stream geometry.

Photo 6.
Dense riparian vegetation and shallow flat channel bottom.

Photo 7.
Shaded bench near river's edge with eroding bank.

Vegetation

The Cottonwood Park Reach is flourishing with a variety of mature riparian shrubs and trees. Riparian vegetation is essential to maintain high water quality and ecosystem stability in a stream. A diverse variety of species were observed including; Cottonwood, Willow, Box Elder, Chokecherry, Silver Buffalo Berry, Water Speedwell, Old-man's Beard, Honeysuckle, Hawthorn, Cherry Plum, and more.

Site Limitations

Pedestrian access to the stream is restricted in many locations by dense vegetation along the river banks and on the adjacent floodplain. In locations where people are getting into the river active erosion is occurring on the river bank. This is due to a steep unvegetated bank and excessive use without sufficient erosion protection.

There are locations where the existing upland trails converge with the river's edge delivering pedestrians to the river without adequate provisions for getting them down to the water and protecting the river bank.

In many locations, the stream is overwide for low flow conditions, which dominate the warm weather months of the year. Wide water surfaces with shallow depths create warmer water temperatures that contribute to poor fish habitat especially during critical low flow times.

Vegetation growth extending into the active stream channel, while providing critical shade and cover, is also restricting human movement through the stream corridor and access to quality habitat areas. There are many locations in this reach that fishing from the river or bank of the river is not possible because of dense bank vegetation. Other locations of the Mancos River in Town have a more open river corridor that allows for movement and recreation through the river system without compromising the critical benefits of riparian vegetation near the river bank.

Photo 8.
Cottonwood Park restricting vegetation.

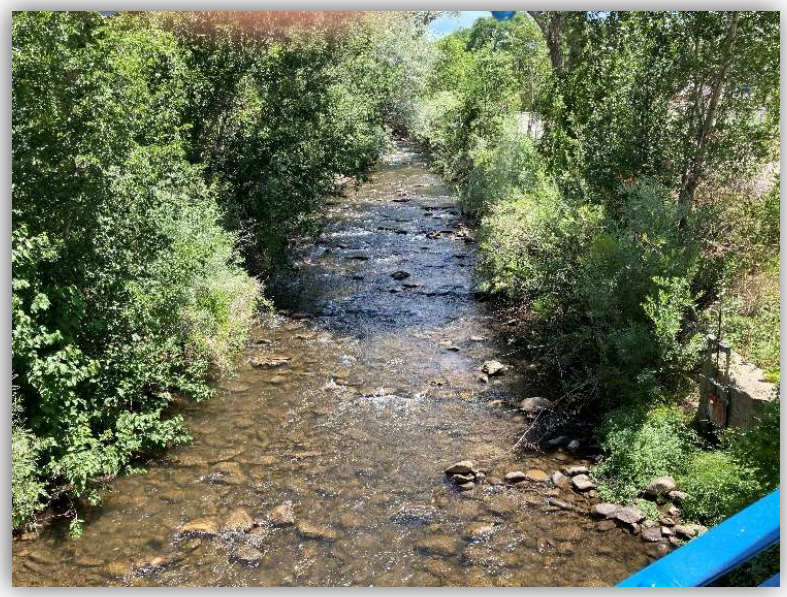


Photo 9.
Example of non-restricting vegetation.

Enhancement Opportunities

The Cottonwood Park Reach of the Mancos River is already a cherished community asset. It is utilized as a wild space to spread out and enjoy the high altitude climate. The proposed improvements for this section contimplates relativley simple enhancements that will contribute significantly to its value and enjoyment. Improvments in this Reach focus on improving the potential for sustainable fish habitat and increasing pedistrian access to the river and along the river corriodor.

Fish habitat creation involves some basic channel shaping and the introduction of stratigically placed rock structures to increase scour and provide much needed depth and cover for survival during low flow periods. Channel shaping is accomplished by creating scour holes below rock structures and alternating low flow bars to increase depth between structures. A plan view of the proposed improvements near the parking lot is shown in Figure 4. A complete improvement plan for the Cottonwood Park can be found in Appendix 1.

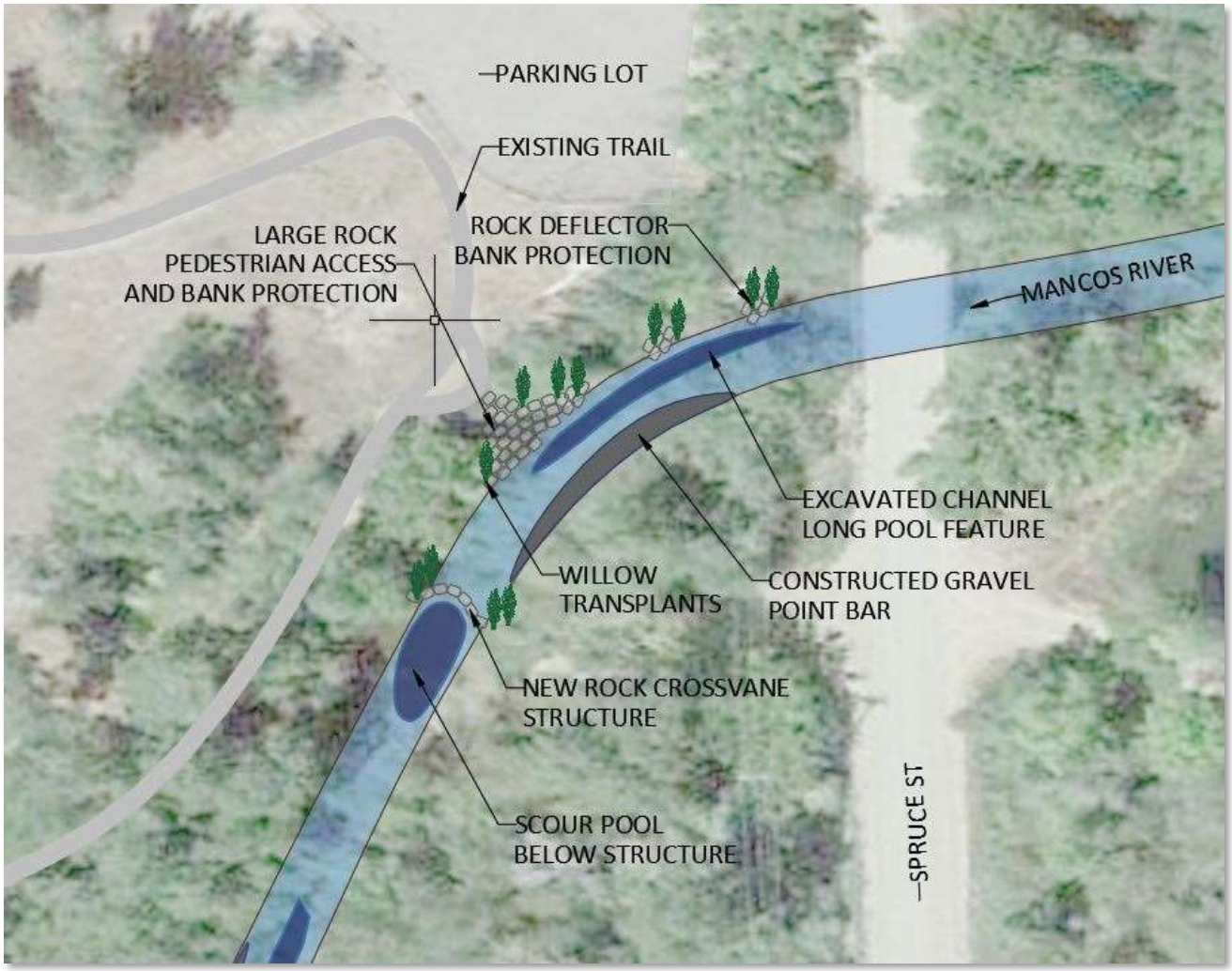


Figure 4. Proposed Improvement Concept Plan Cottonwood Park near Parking Lot.

The photos below are examples of rock cross-vanes. Cross vanes are used to create self-sustaining depth in the channel below the structures. In addition, the photos show excavation on the outside of the bend to create depth in the channel bed during low flow periods, with excavated material used to create gravel bars shaped on the inside point bar. The depth created in the channel bed can benefit a variety of species including humans during the hot summer months.

Photo 10. Gravel bar, channel narrowing.

Photo 11. Rock Cross vane with gravel bar and excavated low flow channel.

Photo 12. Rock Cross vanes with scour pool below structure.

Photo 13. Low flow channel narrowing with gravel bars to reduce width.

Pedistrian access would be improved in designated locations where the eisting trail network intersect with the river's edge. These locations would coincide with improved habitat for fish as well as increased depth and bank stablilty. Having designated locations for river access allows for appropriate bank stablization and protects other locations from increased erosion due to unprotected access.

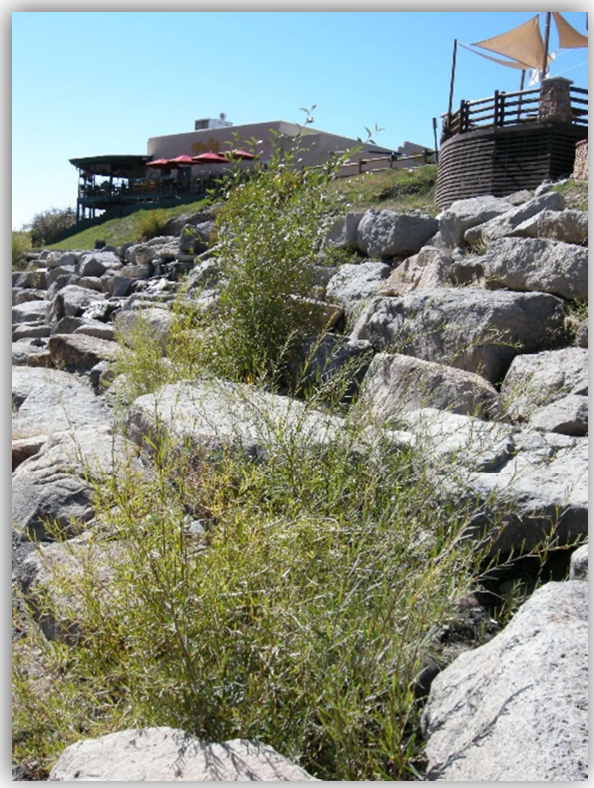


Photo 14. Rock step river access.

Photo 15. Rock bank protection and river access.

Example photos 13 and 14 show large rock used to create bank protection and a natural stairway down into the water's edge on the San Juan River in Pagosa Springs.

Note: riparian shrubs and trees can be planted in the spaces between rocks to create a softer, more natural look.

Photo 16. Pedestrian access utilizing large stacked rock stairway on the Mancos River

Preliminary Cost Estimate: Cottonwood Park Concept Improvement Plan

Cottonwood Park Concept Plan Preliminary Cost Estimate				
Prepared by Southwest River Engineering 02/2021				
Preliminary	Preliminary Cost Estimate	Estimated quantity	UNIT	Cost per Unit	COST ($)
	Materials			Materials subtotal	$36,100.00
	Construction			Construction subtotal	$72,350.00
				Project Subtotal	$108,450.00
				Construction Management (3wk)	$15,000.00
				Permitting/Final Design/Bid Process	$25,000.00
				Total	$148,450.00

A detailed breakdown of the construction costs can be found in Appendix B.

Mancos School District Reach

Existing Conditions

The Mancos School District Reach is defined as the area between the intersection of the Mancos River with South Beech Street and South Walnut Street. This section of stream is relatively straight with good riparian vegetation on both sides of the river. The river is surrounded by Mancos School District property with school buildings on the north side and athletic fields on the south side. There are two existing pedestrian bridges that cross the river. There is a partially completed riverwalk trail on the north side of the river

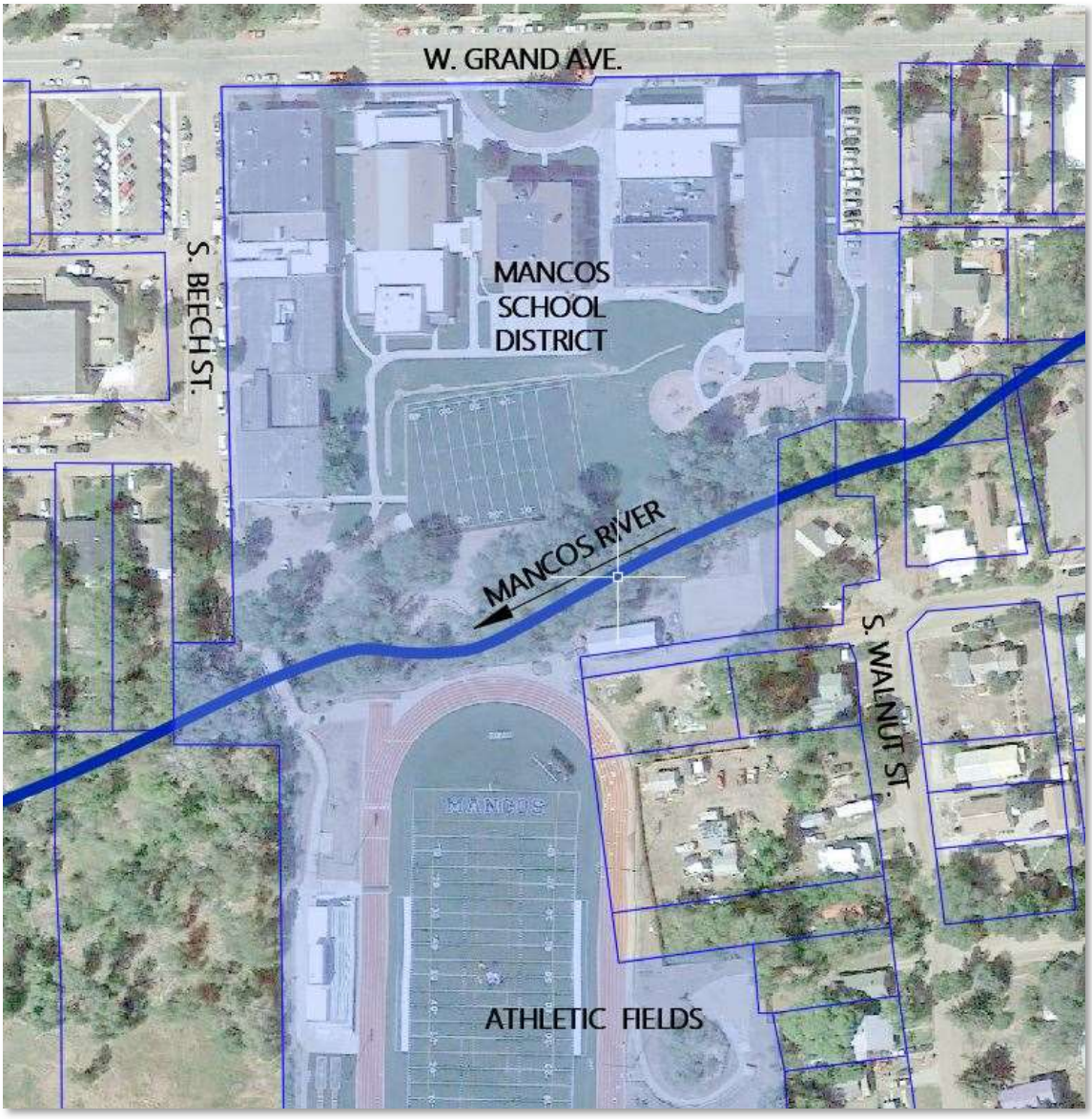


Figure 5. Mancos School District Reach.

Current River Access

Access to the Mancos School District Reach is primarily from the existing trail on the north side of the river. The trail extends from South Beech Street to South Walnut Street. An attractive outdoor class room is located on the north side of the river adjacent to the practice field along the trail alignment. There are no improved or designated access locations to the river's edge in this Reach.

Photo 17. Incised wide shallow low flow channel with limited access on the banks.

Stream Geomorphology

The Mancos River is incised throughout the Mancos School District Reach with strong vegetated stream banks and a healthy riparian canopy. There is no active connection with the floodplain due to floodplain development and base level lowering of the river channel. This has contributed to the incision of this section over time. The average entrenchment ratio for this section is 1.3. The overall slope through this Reach is approximately 2% and approximate bankfull width is 25 feet. Portions of the channel profile have been modified for historical diversions that are no longer active.

Photo 18. Historical Diversion Structure

Site Limitations

Access down to the river's edge is severely limited by the high banks and thick riparian vegetation. On the south side of the river the athletic fields are fenced and access to the river is limited.

The stream channel is littered with debris and large blocks of concrete used in dilapidated diversion structures. Some of the debris create a safety hazard for anyone utilizing the in-channel river corridor. Portions of the stream lack depth and holding water for fish habitat.

Enhancement Opportunities

Mancos is fortunate to have its educational campus centrally located in the heart of the community surrounded by its lifeblood, the Mancos River. The community values its athletic history and has constructed its outdoor sports stadium to reflect that. There is also an opportunity to express the value of the river to the people of Mancos by embracing its location next to the educational core of the community. The recently constructed outdoor classroom and new Mancos School Garden provide an excellent nexus to expand on this value.

The proposed enhancements for this Reach focus on providing a designated and protected place for teachers, students and the public to get down to the river. In addition, adjacent to the outdoor classroom is an excellent location for a water quality sampling location and a new stream gage. Overall fish habitat and potential floating recreation can be enhanced with minor channel shaping and placement of rock habitat structures.

Photo 19. Limited access to down to river channel.

Photo 20. Concrete debris in river channel.

Photo 21. Strong riparian vegetation.

Paramount to any proposed improvements would be the removal of the hazardous debris located in the river corridor. A portion of the proposed improvements on the Mancos School District Reach are shown in Figure 7. A complete plan set can be found in Appendix A.

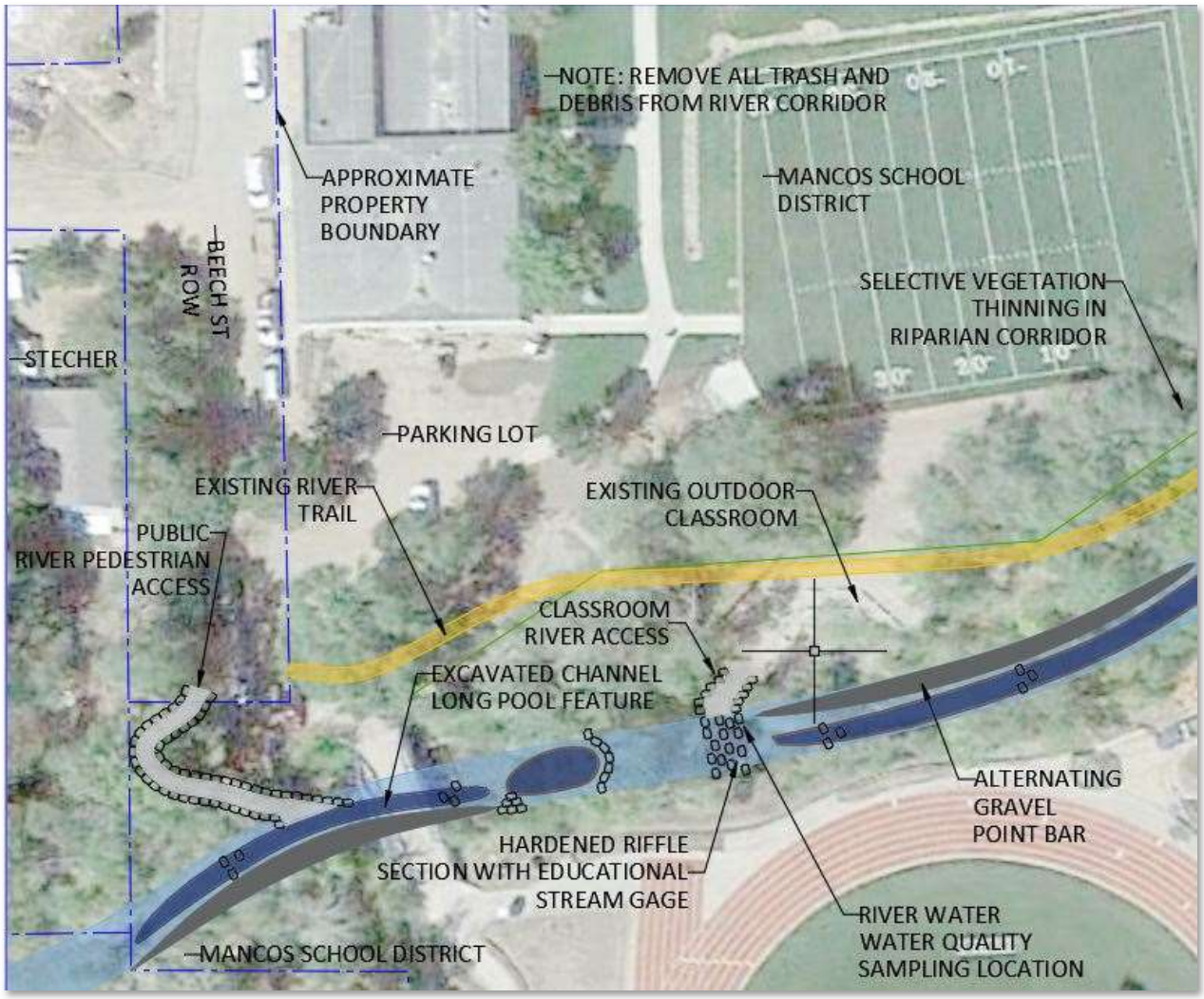


Figure 6. Proposed Improvements MSD Reach near Beech St

Preliminary Cost Estimate: Mancos School District Concept Improvement Plan

Mancos School District Concept Plan Preliminary Cost Estimate				
Prepared by Southwest River Engineering 02/2021				
Preliminary	Preliminary Cost Estimate	Estimated quantity	UNIT	Cost per Unit	COST ($)
	Materials			Materials subtotal	$32,650.00
	Construction			Construction subtotal	$62,900.00
				Project Subtotal	$95,550.00
				Construction Management (3wk)	$15,000.00
				Permitting/Final Design/Bid Process	$25,000.00
				Total	$135,550.00

A detailed breakdown of the construction costs can be found in Appendix B.

Downtown Mancos Reach

Existing Conditions

The Downtown Mancos Reach is defined as the section of river from the alleyway between South Main Street and Aztec Street down to the beginning of the Mancos School District Reach at South Walnut Street. This is the heart of the Mancos downtown business center. The Main Street/Hwy 184 crossing of the Mancos River is a major access route to the south side of Mancos. Development along this section of river has been tight to the river banks, potentially driven by the value of real estate in the downtown core area. Unfortunately, it appears this section of the Mancos River has not been embraced as a community asset but rather a property limiting drainage utility. Many locations are littered with trash and construction debris that should be removed as they are a considerable safety hazard for any river user.

Figure 7. Downtown Mancos Reach

Current River Access

Access to the Downtown Mancos River Reach is very limited due to the density of development adjacent to the river and limited public property intersections with the river. There are no improved or designated public access locations to the river's edge in this Reach.

Photo 22. Steep river bank with concrete debris dumped on river bank.

Photo 23. Concrete debris protecting building from erosion.

Stream Geomorphology

The Downtown Mancos reach is also incised with limited vegetation due to adjacent development along the river corridor. There is limited sinuosity that has contributed to the base level lowering of the river channel over time. There is no active connection with the floodplain due to dense riverside development and Town infrastructure.

Photo 24. Existing trash and debris with unstable river bank.

Photo 25. Existing trash and debris no floodplain connection.

Site Limitations

The number of properties adjacent to the Downtown Reach could make river improvements difficult if individual properties cannot reach a consensus on the goals of the improvement project. Because of the amount of infrastructure in this location, protecting private and public property from the hydrodynamic forces of the river must be the included with any proposed access and recreation improvements. In addition, space and access points to complete any improvements is extremely limited and will add logistical difficulties as well as increased cost.

Enhancement Opportunities

Any proposed improvements to the Downtown Reach for access or recreation must be coupled with the stabilization of the existing river banks and protection of private and public infrastructure. This can be done in a way that also enhances the river aesthetic and function.

A portion of the plan proposed in the Downtown Reach is shown in Figure 10. A full plan for the Downtown Reach can be found in Appendix A.

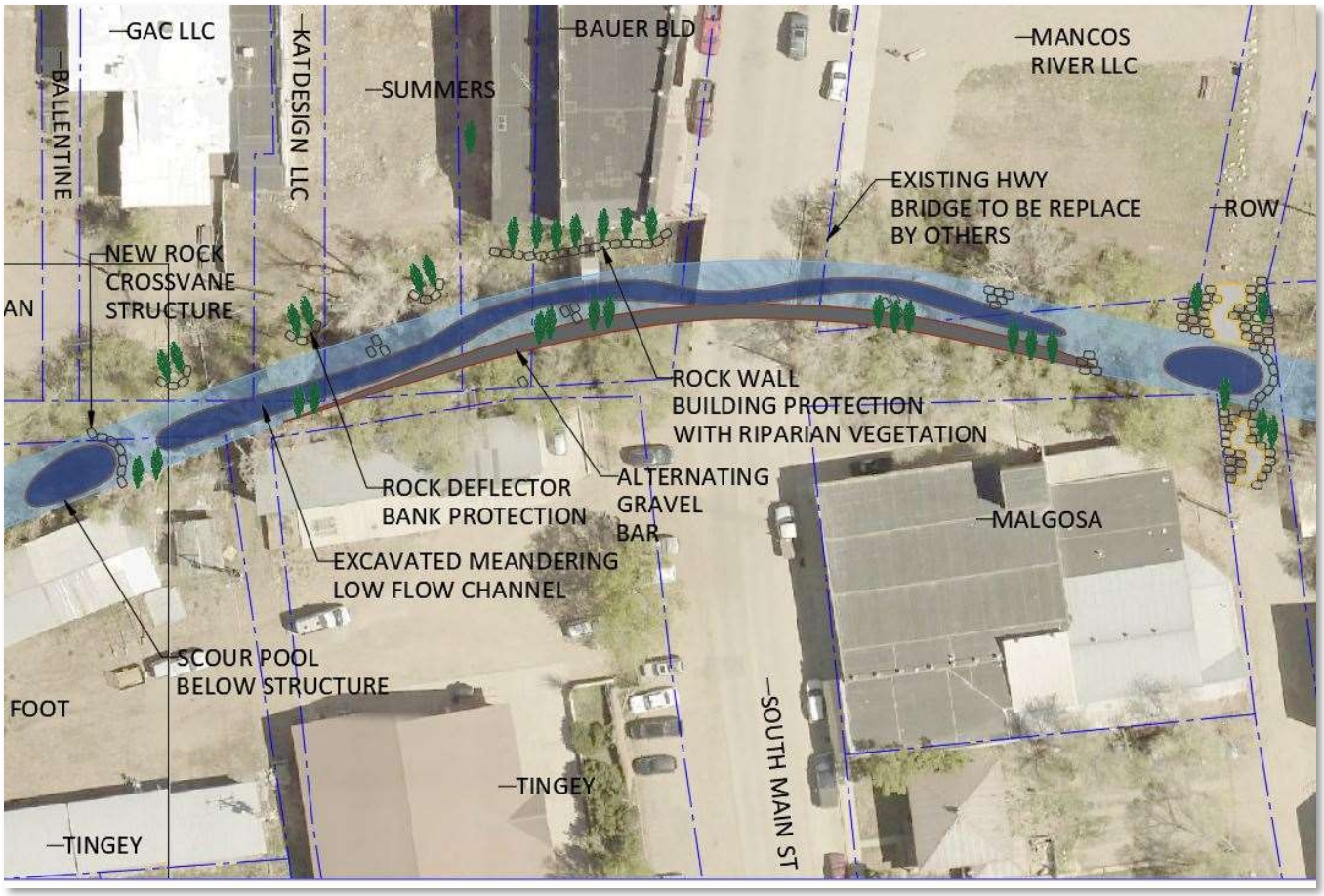


Figure 8. Proposed improvements Downtown Reach near Main St.

To improve recreational access, this plan recommends creating public access points at the public alley just east of the Hwy 184/Main Street bridge and on the north side of the river at the Library pedestrian bridge in the Mesa Street right of way. This would allow downtown users two convenient locations to connect river use in Town.

Photo 26. Example of rock stair pedestrian access.

Photo 27. Example of designated river access with strong riparian vegetation.

The buildings on the 100 block of Grand Avenue are located very close to the north river bank and should be protected with a combination of riparian vegetation, rock deflectors and rock toe protection.

Photo 28. Hwy 184 Bridge and Bauer Building south wall as river bank.

Photo 29. Bauer Building wall undermined by river.

To improve habitat and create floating recreation at a larger range of flows, an excavated low flow channel that meanders within the existing river banks is proposed through the Downtown Reach. This section of river should be more structure intensive to help protect public and private infrastructure from the erosive forces of the river. Habitat rocks strategically placed along the low flow channel will increase holding water for fish. The photos to the left show examples for rock structures that could be utilized in this Reach. Overall, this could create an accessible river corridor that will hold fish and provide an additional attraction to the downtown area.

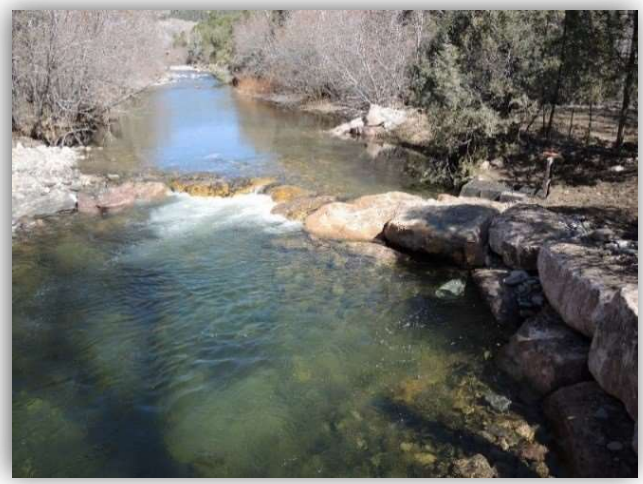


Photo 30. Example of Rock Cross Vane Structure connected to rock toe protection.

Photo 31. Example of narrow low flow channel with added habitat rock.

Photo 32. Example photos of rock cross vane with alternating gravel bar and strong riparian vegetation.

To improve habitat and create floating recreation at a larger range of flows, an excavated low flow channel that meanders within the existing river banks is proposed through the Downtown Reach. This section of river should be more structure intensive to help protect public and private infrastructure from the erosive forces of the river. Habitat rocks strategically placed along the low flow channel will increase holding water for fish. The photos to the left show examples for rock structures that could be utilized in this Reach.

Overall, this could create an accessible river corridor that will hold fish and provide an additional attraction to the downtown area.

Preliminary Cost Estimate: Downtown Reach Concept Improvement Plan

Downtown Reach Concept Plan Preliminary Cost Estimate				
Prepared by Southwest River Engineering 02/2021				
Preliminary	Preliminary Cost Estimate	Estimated quantity	UNIT	Cost per Unit	COST ($)
	Materials			Materials subtotal	$60,500.00
	Construction			Construction subtotal	$78,250.00
				Project Subtotal	$138,750.00
				Construction Management (3wk)	$15,000.00
				Permitting/Final Design/Bid Process	$25,000.00
				Total	$178,750.00

A detailed breakdown of the construction costs can be found in Appendix B.

Project Implementation

The proposed improvements presented in this report are a first step in identifying the potential for the river corridor for recreation and access through the Town of Mancos. This report has presented effective improvement concepts that have transformed how rivers are viewed, enjoyed, and in turn protected by other Southwest communities. This report should be a starting point for a more in-depth process of garnering community input on future river enhancements.

Once community and project partners create consensus on future river projects, then the permitting and project funding components can begin. River improvement projects are permitted under the U.S. Army Corps of Engineers 404 permitting process. In addition, this project is located in a mapped FEMA floodplain and would also require a floodplain development permit from the local floodplain administrator. Depending on the scope of the project the permitting process can last several months to over a year. Also, if improvements are proposed on private property, legal permission must be granted prior to construction.

Funding for community river improvement projects is typically accomplished through a combination of local, state, and federal assistance as well as grants and private donations. The watershed driven Mancos River Stream Management Plan will position this project favorably with grant opportunities from state agencies. After implementation, a commitment to sustained success of the project through a modest maintenance budget on the local level is strongly encouraged.

Appendix A: Concept Drawings by Reach

Cottonwood Park Concept Plan Preliminary Cost Estimate

Prepared by Southwest River Engineering 02/2021

Preliminary Cost Estimate

SOUTHWEST RIVER ENGINEERING

Preliminary Cost Estimate		Estimated quantity	UNIT	Cost per Unit	COST ($)
Materials					
Large Rocks 3-4 ft		EA	200	$150	$30,000.00
Willow Transplants (gather on site)		EA	40	$40	$1,600.00
Trial extension material		LF	100	$45	$4,500.00
Construction				**Materials subtotal**	**$36,100.00**
Build rock cross vane structure (20 rocks each)		EA	4	$4,000	$16,000.00
Build rock deflector structures (10 Rocks Each)		EA	11	$2,500	$27,500.00
Channel Shaping		CY	300	$15	$4,500.00
Selective thinning/mulching in Riparian Corridor 20 feet each side of river		AC	1	$10,000	$10,000.00
Trail Extension Construction		LF	100	$65	$6,500.00
Transplant Willows		EA	40	$40	$1,600.00
Seed & mulch all disturbed soil areas with native grass seed mix		AC	0.5	$2,500	$1,250.00
Site cleanup, mobilization/demobilization		LS	1	$5,000	$5,000.00
				Construction subtotal	**$72,350.00**
				Project Subtotal	**$108,450.00**
				Construction Management (3wk)	**$15,000.00**
				Permitting/Final Design/Bid Process	**$25,000.00**
				Total	**$148,450.00**

Mancos School District Concept Plan Preliminary Cost Estimate

Prepared by Southwest River Engineering 02/2021

Preliminary Cost Estimate

SOUTHWEST RIVER ENGINEERING

Preliminary Cost Estimate

	Estimated quantity	UNIT	Cost per Unit	COST ($)
Materials				
Large Rocks 3-4 ft	EA	175	$150	$26,250.00
Willow Transplants (gather on site)	EA	10	$40	$400.00
River Access Trial extension material	LF	120	$50	$6,000.00
Construction			**Materials subtotal**	**$32,650.00**
Build rock cross vane structure (20 rocks each)	EA	2	$4,000	$8,000.00
Build rock deflector structures (10 Rocks Each)	EA	3	$2,500	$7,500.00
Place Habitat Rock Structures (3 Each)	EA	6	$500	$3,000.00
Construct Hardened riffle with stream guage	EA	1	$15,000	$15,000.00
Channel Shaping	CY	330	$15	$4,950.00
Selective thinning/mulching in Riparian Corridor 20 feet each side of river	AC	0.5	$10,000	$5,000.00
River Access Construction	LF	120	$65	$7,800.00
Trash and debris removal	LS	1	$5,000	$5,000.00
Transplant Willows	EA	10	$40	$400.00
Seed & mulch all disturbed soil areas with native grass seed mix	AC	0.5	$2,500	$1,250.00
Site cleanup, mobilization/demobilization	LS	1	$5,000	$5,000.00
			Construction subtotal	**$62,900.00**
			Project Subtotal	**$95,550.00**
			Construction Management (3wk)	**$15,000.00**
			Permitting/Final Design/Bid Process	**$25,000.00**
			Total	**$135,550.00**

Downtown Reach Concept Plan Preliminary Cost Estimate
Prepared by Southwest River Engineering 02/2021

Preliminary Cost Estimate

SOUTHWEST RIVER ENGINEERING

Preliminary Cost Estimate

	Estimated quantity	UNIT	Cost per Unit	COST ($)
Materials				
Large Rocks 3-4 ft	EA	350	$150	$52,500.00
Willow Transplants (gather on site if available)	EA	50	$40	$2,000.00
River Access trail material	LF	120	$50	$6,000.00
Construction			**Materials subtotal**	**$60,500.00**
Build rock cross vane structure (20 rocks each)	EA	3	$4,000	$12,000.00
Build rock deflector structures (10 Rocks Each)	EA	6	$2,500	$15,000.00
Place Habitat Rock Structures (3 Each)	EA	7	$500	$3,500.00
Rock building protection	EA	1	$10,000	$10,000.00
Channel Shaping	CY	300	$15	$4,500.00
River Access Construction	EA	2	$5,000	$10,000.00
Trash and Debris Removal	LS	1	$10,000	$10,000.00
Transplant Willows	EA	50	$40	$2,000.00
Seed & mulch all disturbed soil areas with native grass seed mix	AC	0.5	$2,500	$1,250.00
Site cleanup, mobilization/demobilization	LS	1	$10,000	$10,000.00
			Construction subtotal	**$78,250.00**
			Project Subtotal	**$138,750.00**
			Construction Management (3wk)	**$15,000.00**
			Permitting/Final Design/Bid Process	**$25,000.00**
			Total	**$178,750.00**

City of Mancos Concept Plan Preliminary Cost Estimate (3 locations)

Prepared by Southwest River Engineering 02/2021

Preliminary Cost Estimate

SOUTHWEST RIVER ENGINEERING

Preliminary Cost Estimate	Estimated quantity	UNIT	Cost per Unit	COST ($)
Materials				
Large Rocks 3-4 ft	EA	725	$150	$108,750.00
Willow Transplants (gather on site if available)	EA	90	$40	$3,600.00
River Access trail material	LF	340	$50	$17,000.00
Construction			**Materials subtotal**	**$129,350.00**
Build rock cross vane structure (20 rocks each)	EA	9	$4,000	$36,000.00
Build rock deflector structures (10 Rocks Each)	EA	20	$2,500	$50,000.00
Place Habitat Rock Structures (3 Each)	EA	13	$500	$6,500.00
Rock building protection	EA	1	$10,000	$10,000.00
Construct Hardened riffle with stream guage	EA	1	$15,000	$15,000.00
Selective thinning/mulching in Riparian Corridor 20 feet each side of river	AC	1.5	$10,000	$15,000.00
Channel Shaping	CY	930	$15	$13,950.00
River Access Construction	LF	300	$65	$19,500.00
Trash and Debris Removal	LS	1	$15,000	$15,000.00
Transplant Willows	EA	90	$40	$3,600.00
Seed & mulch all disturbed soil areas with native grass seed mix	AC	1.5	$2,500	$3,750.00
Site cleanup, mobilization/demobilization	LS	1	$10,000	$10,000.00
			Construction subtotal	**$198,300.00**
			Project Subtotal	**$327,650.00**
			Construction Management (9wk)	**$45,000.00**
			Permitting/Final Design/Bid Process	**$50,000.00**
			Total	**$422,650.00**

Attachment E
Detailed Project Budget and Timeline

Budget & Timeline Table

Task	Description	Target Start Date	Target Completion Date	CWCB Funds - Labor and Mileage	CWCB Funds - Materials	CWCB Funds - Total	Town of Mancos Funding Cash*
1	Engage Stakeholders and Education	5/1/2022	6/30/2025	$147,000.00		$147,000.00	$30,000.00
2	River Health and Flow Improvements	5/1/2022	6/30/2025	$83,900.00	$22,500.00	$106,400.00	
3	Watershed Health Assessment Including Vulnerability Due to Climate Change	5/1/2022	6/30/2025	$145,500.00		$145,500.00	
4	Town of Mancos River Improvements for Recreation	5/1/2022	6/30/2025	$48,500.00		$48,500.00	$30,000.00
5	Development of the Mancos Watershed SMP	5/1/2022	6/30/2025	$89,000.00		$89,000.00	
6	Project Coordination and Administration	5/1/2022	6/30/2025	$59,600.00		$59,600.00	
	TOTALS			**$573,500.00**	**$22,500.00**	**$596,000.00**	**$60,000.00**

Budget & Timeline Table

Task	Mancos Irrigator Funding *Cash	Southwestern Water CD *Cash	MCD Grant Funding *Cash	MCD/NRCS Federal Funding *Cash	Total Cash Match	MCD Funding In-Kind*	3-Year Project Total
1				$5,000.00	$35,000.00	$50,000.00	**$232,000.00**
2	$3,600.00	$25,000.00	$36,000.00	$25,000.00	$89,600.00	$50,000.00	**$246,000.00**
3			$134,500.00	$100,000.00	$234,500.00	$50,000.00	**$430,000.00**
4					$30,000.00	$15,000.00	**$93,500.00**
5						$50,000.00	**$139,000.00**
6							**$59,600.00**
	$3,600.00	**$25,000.00**	**$170,500.00**	**$130,000.00**	**$389,100.00**	**$215,000.00**	**$1,200,100.00**

Contractor Proposals by Task Budget Breakdown

	Wilson Water Group	Stephen Monroe	DWRF	MSI	UMUT	ElephantFish	SW River Engineering	MRAC	**Total**
Task 1	$25,000.00	$10,000.00	$5,000.00	$2,000.00	$5,000.00			$10,000.00	**$57,000.00**
Task 2	$15,000.00	$5,000.00		$2,000.00					**$22,000.00**
Task 3	$5,000.00	$20,000.00	$10,000.00	$10,000.00	$2,000.00	$10,000.00			**$57,000.00**
Task 4							$25,000.00		**$25,000.00**
Task 5		$5,000.00	$5,000.00	$2,000.00	$5,000.00			$10,000.00	**$27,000.00**
Task 6									**$0.00**
Total	**$45,000.00**	**$40,000.00**	**$20,000.00**	**$16,000.00**	**$12,000.00**	**$10,000.00**	**$25,000.00**	**$20,000.00**	**$188,000.00**

MCD Staffing by Task Budget Breakdown

	Executive Director	Watershed Coordinator	District Manager	Technician 1	Technician 2	AmeriCorps VISTA	
Task 1	$31,000.00	$42,000.00	$10,000.00			$7,000.00	**$90,000.00**
Task 2	$5,000.00	$5,900.00		$22,000.00	$22,000.00	$7,000.00	**$61,900.00**
Task 3	$10,000.00	$15,000.00	$20,000.00	$15,000.00	$15,000.00	$3,500.00	**$78,500.00**
Task 4	$15,000.00	$5,000.00				$3,500.00	**$23,500.00**
Task 5	$15,000.00	$47,000.00					**$62,000.00**
Task 6	$20,000.00	$15,000.00	$24,600.00				**$59,600.00**
Total	**$96,000.00**	**$129,900.00**	**$54,600.00**	**$37,000.00**	**$37,000.00**	**$21,000.00**	**$375,500.00**

Materials Budget Breakdown				
Units	Materials Description	Cost Per Unit	CWCB Total Cost	Total Cost
6	Diversion Metering units	$7,266.00	**$15,000.00**	**$43,600.00**
12	Shipping for Water Quality Samples	$250.00	**$3,000.00**	**$3,000.00**
4	Water Quality Monitoring Probes	$1,125.00	**$4,500.00**	**$4,500.00**
17,400	Mileage for MWG Team	0.575	**$10,000.00**	**$10,000.00**

Action Plan produced by Agriculture and Stream Management Workshop
held August 3, 2021
Report Drafted by Ben Wolcott for the Mancos Conservation District

The workshop was held to bring together ideas and discuss their feasibility by agriculture producers and water officials. The topics included more effective water delivery through management, physical infrastructure to improve river management, and management practices that might extend the time a given water right stays in priority. Many people had ideas of their own to share along with ideas gathered through interviews with other producers who were unable to attend.

The result of this in depth discussion was an action plan consisting of six recommendations for funding and future action in phase II of the Mancos Stream Management Plan:

1) Education

A robust education program with an effective outreach strategy is needed. The program should address a multitude of issues that are compounded by new land owners and subdivided properties. One topic is ditch operations when running an open ditch compared to a pipe, member management, calling for supplemental water, laterals, general water law, minimum flows to overcome losses, pooling agreements. Another topic was understanding hydrology and water management which could be facilitated with a model such as the Bureau of Reclamation's water model in Denver or a traveling model. Lastly, education surrounding general reservoir management, water storage and releases, priorities of ditches and reservoirs, and losses would greatly aid in managing the river. The more the stewards of the land understand about the resources they manage the more effective any other systems will be in having the desired outcome.

2) Loss studies and timing

A more complete loss study of the entire Mancos river and its tributaries would greatly aid in managing water. Understanding where water will disappear and where it will reappear and when is a powerful tool for river planning and even day to day usage. Using this study, a more comprehensive plan can be made for riparian vegetation to best balance bank stability, shading, and an overgrowth of canopy cover. In some places trees and willows could greatly benefit the riparian system, but in others there may be too many cottonwood saplings that need a disturbance to balance the system.

The timing of the water changes is also less understood than it should be. A better study of timing on the river is needed to fully grasp the effects of diurnal fluctuations in flows and their effects on irrigation diversions. The Mancos Water Conservancy Project manages Jackson Lake to help reduce massive diurnal swings to aid water users. The timing of release changes and snowmelt peaks greatly alters daily river operations. Fully understanding these times would greatly benefit all river management.

3) Storage and infrastructure

There exists a reasonable amount of storage in the watershed, although new storage ideas have been presented. Very small reservoirs or expanding existing storage are potentially viable ideas to allow water to be stored during very wet periods for use later. Some of the storage is very old and in need of extensive and costly maintenance. The infrastructure of reservoirs and major diversions is all aging and needs to be repaired or replaced at some point in time. Finding methods to fund such projects to ensure the future availability of water storage in the watershed is a high priority. Many drought resilience strategies rely on being able to store an over abundance of water.

4) Measurement Network

Currently the water commissioner and ditch riders have a lot of time invested in just finding the water when there is any sort of management change on the river, which is almost daily. A measurement network, composed of water meters and data loggers on flumes and weirs, all transmitted at frequent intervals to a central website would greatly increase the efficiency of water changes. Priorities could be set appropriately to account for short term events like massive summer rain events. Water use could be more effectively documented. Lake diversions and releases could be better timed to demand and to better work with nature rather than against it. Every water diversion structure would ideally be hooked into a shared network to better manage the entire system. Having more data can allow for more effective change in producing a drought resilient system.

5) Water Pooling

Two water pooling ideas, made complex by the specific water systems on the Mancos river, are worth pursuing further. The first involves ditch education and management, where a ditch as a whole entity, rather than a collection of water users calls for water at a set total volume. The water commissioner then delivers whatever adjudicated water is in priority, the lake delivers the remainder. This gets very complex with many users and even more priorities on one ditch. There are 49 such ditches on the river, and all are very complex. This puts the burden of communication on the ditch company, but only works if the entire ditch membership can work together in harmony.

The second idea involves individual water users contributing individual lake water allotments to a pool managed by the Mancos Water Conservancy District. This pool would be released to the river to be used as adjudicated water by all. In effect, a user would be simplifying their part of the system: instead of managing adjudicated and lake water together, they would only be managing adjudicated water. Although this would limit their options for use, an irrigator would potentially have longer access to water than they otherwise would on their own. Both management systems could potentially be used to greatly expand water availability through the year. More water for longer periods would likely benefit all users and the entire riparian ecosystem as a whole.

6) Recharging the local aquifer

Another approach to creating a drought resilient landscape capable of supporting agriculture is to slow the passage of water. The concept of filling the local shallow aquifer or soil profile allows water to filter through the system to return to the river at a later time. This can be extensive with ditch diversions over a large area, or it can be very local event caused by a beaver dam. Altering the hydrologic gradient to elevate the water table could cause the same effect. The entire idea is to not use the river as a gutter to get rid of all the water in the valley, but as a conduit to fill the soils of the area, to allow better growth and soil health, which then in turns returns a greater amount of water to the river. Understanding soil types and locations to save current practices that recharge the groundwater of the area and to perhaps implement new practices may be pivotal in creating a stable ecosystem capable of withstanding dramatic yearly changes in water availability.

Many of the actions on this list are a combination of needed infrastructure and management changes. All have the potential to greatly increase the drought resiliency of the Mancos watershed, aid agriculture, and create great opportunities for a healthy riparian ecosystem. While these are the actions recommended for funding and further action for Phase II of the Mancos Stream Management Plan, there will certainly be others in the future.

Mancos Conservation District

To promote long-term sustainable use and protection of the Mancos River Watershed. We provide educational, financial and technical assistance to meet these conservation goals.

July 6, 2021

Clint Evans, State Conservationist
Natural Resources Conservation Services
Denver, Colorado 80203

RE: Letter Requesting PL83-566 PIR Funding

Dear Mr. Evans,

The Mancos Conservation District is requesting assistance under Public Law 83-566 to conduct preliminary investigations and reporting for determining the feasibility of a proposed watershed plan and its potential eligibility for the Watershed and Flood Prevention Operations (WFPO) Program. This request includes an approximate watershed area of 153,600 acres with the Mancos Conservation District jurisdictional boundaries.

Within the Mancos Conservation District boundaries there are identified watershed wide vulnerabilities to our agricultural water management including our drainages, irrigation infrastructure, water quantity and quality improvements, and the availability of our agricultural water supply. These issues may also have significant risk for wildfire and flooding events, that could cause great damage to human life, wildlife, private property, municipal water supply and recreational areas if not addressed.

According to the Montezuma County Multi-Jurisdictional Hazard Mitigation Plan, "snowmelt floods typically begin as spring runoff appears, after the first spring warming trend. If the warming trend continues up to 8 to 10 consecutive days in a basin where the snowpack has a water content more than about 150% of average, serious flooding can develop."

In 2019 the San Juan Watershed was well over 200% of normal snowpack for the year. Flooding was only prevented by the total duration of snowmelt floods occurring over a period of weeks rather than days. A single cold day in late May and continued cold fronts interrupted the melting cycle causing the rising water to decline and stabilize until the cycle could begin again. This could have been a catastrophic year for irrigation infrastructure and private lands within our designated watershed area if we had seen snowmelt floods within our 2015 pattern.

Along with this risk for flooding, the Mancos Conservation District irrigators are also facing historic drought conditions and aging infrastructure in their diversion and delivery systems. This has caused additional challenges to the already struggling irrigators. These challenges currently in place, also make it impossible for irrigators to store the water allocated to each entity and distribute it during the months it is most needed.

604 Bauer Avenue
P.O. Box 694
Mancos, CO 81328
970-533-7317

These systems are also located down watershed from the San Juan National Forest and are at great risk for water quality degradation and are at heightened susceptibility to flash floods, and mud and debris flows due to a woodland wildfire. The outdated and aging infrastructure is not currently able to give our irrigators the options to divert or close the system in the case of a major wildfire event.

The Mancos Conservation District has performed outreach within our watershed area to determine the need and interested participation. We look forward to the opportunity to address these concerns that put over 12,000 irrigated acres at risk for future sustainability of their production and animal operations.

Thank you for your consideration to support this project,

Sincerely,

Michael Nolan, President
Mancos Conservation District
compostnolan@gmail.com
828-319-5252

United States Department of Agriculture

Natural Resources Conservation Service
Denver Federal Center
Bldg. 56, RM. 2604
P.O. Box 25426
Denver, CO 80225-0426

August 13, 2021

Michael Nolan, President
Mancos Conservation District
604 Bauer Ave.
Mancos, CO 81328

Re: Response – Letter Requesting PL83-566 PIR Funding

Dear Mr. Nolan:

We are in receipt of your Mancos Conservation District's written request for assistance from the Natural Resources Conservation Service (NRCS) administered PL-566 Watershed Program.

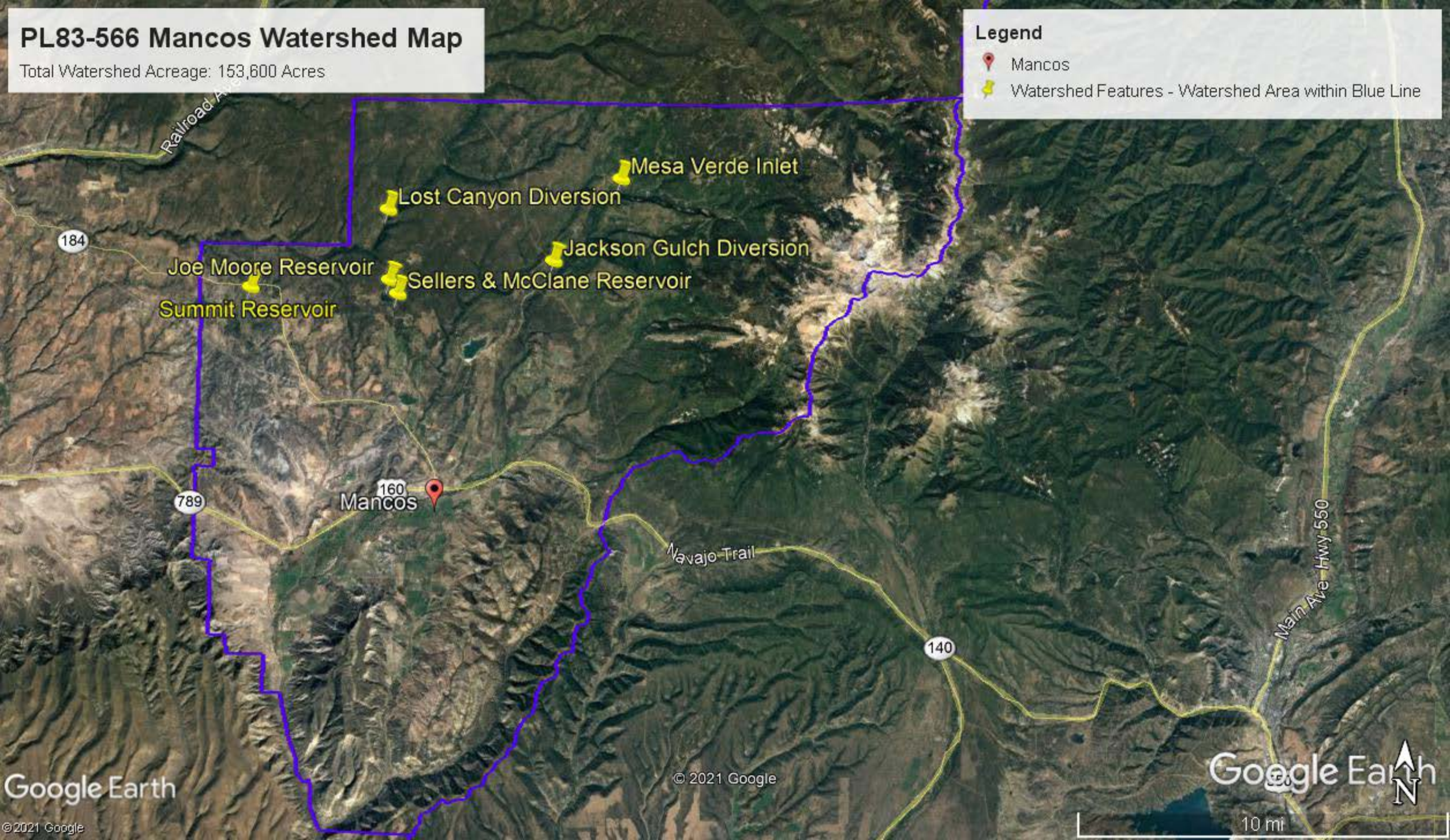
We would like to plan a meeting with you and other interested parties. The purpose of the meeting will be to articulate how the program works, to confirm that it can provide the needed assistance, and to possibly determine a plan to move forward.

Please feel free to reach out to me at your earliest convenience for meeting coordination at heidi.ramsey@usda.gov.

Sincerely,

Heidi Ramsey

Heidi Ramsey
State Watershed Program Manager


PL83-566 Mancos Watershed Map
Total Watershed Acreage: 153,600 Acres
Legend
Mancos
Watershed Features - Watershed Area within Blue Line
Mesa Verde Inlet
Lost Canyon Diversion
Jackson Gulch Diversion
Joe Moore Reservoir
Sellers & McClane Reservoir
Summit Reservoir
184
789
160
Mancos
Navajo Trail
140
Main Ave - Hwy 550
Google Earth
© 2021 Google
N
10 mi

Attachment H
Letters of Support

DWRF Dolores Watershed Resilient Forest Collaborative

Chris Sturm
1313 Sherman Street
Room 718
Denver, 80203

November 1, 2021

Dear Mr. Sturm

The Dolores Watershed Resilient Forest Collaborative (DWRF) would like to offer its full support for the Mancos Conservation District's (MCD's) Watershed Restoration grant proposal.

DWRF works to promote forest, community, and watershed resilience through collaboration. To achieve this mission, we realize the need to think and work across boundaries and a support the many and interconnect values at a landscape scale. Developing strategies to reduce wildfire risk using broad stakeholder input and recent scientific approaches is at the core or DWRF's mission. This includes conducting and supporting modelling, planning, prioritizing, and implementation of efforts that broadly enhance social and ecological resilience to disturbances like wildfire and drought.

In 2016, DWRF completed a quantitative wildfire risk assessment and a hydrologic erosion model for the upper Dolores River Watershed. Since spring 2021, we have been updating these approaches to include more refined wildfire models, a suite of new stakeholder-defined highly valued resources and assets, and to better integrate watershed erosion model (the Revised Universal Soil Loss Equation; RUSLE) with the wildfire risk model. Importantly, this update spans a greater geography and includes the Mancos Watershed – a puzzle piece to landscape resilience that was critically lacking with the earlier effort. The Mancos Conservation District has been directly involved in this update and we are enthusiastic about their desire to incorporate this recent modeling effort into drought planning for the Mancos Valley.

This modelling and planning effort looks to identify where there can be the greatest impact for reducing risk to highly valued resources and assets – not just where there is the greatest risk or the easiest place to complete work. As such, this approach will help to narrow down a large area to identify more specific locationse to best invest time, labor, and money to reduce risk to critical water features. This, coupled with the fluvial hazard mapping and other recent assessments, will give the MCD and partners the right tools to develop and execute strategies for drought contingency planning.

While this project is not within the boundary of near-term priorities for the Rocky Mountain Restoration Initiative (RMRI), it is directly in line with the spirit and vision of RMRI. The core reason it is outside an RMRI priority area is because of the forest types under consideration, not because there aren't highly valued resources and assets within the West Mancos River corridor. Working to secure water resources for the Mancos Valley is a critical goal of DWRF and directly aligns with the core RMRI water protection value.

Simply put, this funding will help support efforts to make the West Mancos River more resilient to drought, wildfire, and postfire effects – all critical threats to water supplies for the many Mancos Valley users. DWRF fully supports MCD's goals and will continue to participate and collaborate in these efforts to reduce wildfire and drought risk in a changing climate.

Sincerely,

Danny Margoles
Coordinator, Dolores Watershed Resilient Forest Collaborative
Email: coordinator@dwrfcollaborative.org P: 952.457.8586

Ute Mountain Ute Tribe
Environmental Programs Department
P. O. Box 448
Towaoc, CO 81334-0448
(970) 564-5430

Mancos Conservation District
Attn: Gretchen Rank
604 Bauer Ave.
Mancos, CO 81328

November 2, 2021

Re: Proposal for Stream Management Plan (SMP), Phase II, Mancos River Watershed, SW CO

Dear Gretchen,

On behalf of the Ute Mountain Ute Tribe Environmental Programs Department, we would like to offer our support for the Mancos Conservation District (MCD) proposal, "Mancos Watershed Stream Management Planning Phase II". For the tribe, the Mancos river is deeply rooted in our community, wellbeing and our economy. It provides many values our tribal members hold dear.

The Ute Mountain Ute Tribe is the owner and caretaker of approximately 70 miles of the Mancos River. The Environmental Department has been actively working on behalf of the Tribe to restore the Mancos River, it's riparian habitat and the fishery. We also have water rights on the river that support ranching and irrigated agriculture.

We have actively participated in the Mancos Watershed planning effort for decades. As a water rights holder lower in the watershed we recognize that collaboration is key to securing our values in the watershed since the majority senior water rights are upstream of our interests. We are currently assisting the Mancos River Resilience effort to apply a science based framework to prioritizing values and completing on the ground projects to improve flows, livelihoods and fisheries.

We value this proposed project because we are witnessing the effects of a rapidly changing world with increasing demands on limited water supplies. We recognize that we need to work together collaboratively with stakeholders in the watershed to better understand and prepare for even more drastic environmental changes in the future and the reality of supporting this incredible ecosystem.

We envision using this project to strengthen collaborations with upstream neighbors in the watershed, to better understand the legal, social and hydrologic potential of increasing storage and in-stream flows in the watershed and to develop a comprehensive watershed wide coordinated management strategy using environmental flow modeling.

We offer our support in the following ways: our staff will participate in meetings over the course of the project, we will provide in kind science support sharing water chemistry, flow and physical stream data and will assist in completing riparian stream assessment work in partnership with MCD on and off the Reservation. We will provide scientific and traditional ecological knowledge, direction and insight to shape the Phase II SMP process and products to support comprehensive and effective watershed planning and restoration efforts.

Sincerely,

11.2.21

Colin Larrick
Water Quality Program Manager
Ute Mountain Ute Tribe
Environmental Programs Department

Mountain Studies Institute
SAN JUAN MOUNTAINS COLORADO

November 4, 2021

Colorado Water Conservation Board
ATTN: Chris Sturm
1313 Sherman St. Room 721
Denver, CO 80203

Re: Mancos Conservation District application for Stream Management Plan, Phase II

Dear Colorado Water Conservation Board Members,

On behalf of Mountain Studies Institute's (MSI) Board of Directors and staff, please accept our sincere recommendation for the Mancos Conservation District's (MCD) application for Phase II funding for the Stream Management Plan for the Mancos River. MSI is an independent not-for-profit mountain research and education center established in 2002 in Silverton, Colorado. MSI connects scientists and stakeholders across the San Juan Mountains region to go beyond scientific inquiry to the meaningful application of knowledge that makes a difference for the quality of the environment, our communities, and our future.

Since 2014, MSI has partnered with MCD on a variety of projects focused on strengthening the health and habitat of the Mancos River corridor and the Mancos watershed on a whole. We have collaborated extensively on bringing scientific resources to these efforts to assess and address the changing needs of the Mancos River to be resilient in the face of competing demands and a changing future. Significant work has been done by MCD to continue the Mancos Watershed Group and SMP development. This CWCB proposal includes important next steps for using monitoring data and model refinements to finalize an assessment of the river's riparian habitat, floodplain connectivity, flow, and water quality, as well as concrete actions private landowners and public land managers can take to improve river health and flows. Assessing the headwaters' vulnerability to wildfire and climate impacts to make concrete recommendations for work on forested lands, is of critical important.

MSI considers the Mancos Conservation District a central leader within the Mancos watershed and an important critical link to the various stakeholders, communities, and users that require healthy water of sufficient quantity. A main issue for the Mancos River in the future is that it is currently over allocated, with the majority of water use being agriculture. Add to this the challenges of drought and a changing climate, continuing work and momentum on the Stream Management Plan in this Phase II, that balances all uses and needs will require a coordinated effort across all water users. The MCD proposal serves this purpose well.

Please feel free to contact me should you have any questions regarding our support for the Mancos Conservation District's Stream Management Plan, Phase II proposal.

Sincerely,

Marcie Bidwell, Executive Director

1309 E. Third Avenue Suite #106 Durango CO 81301 | P.O. Box 426 1315 Snowden St. #305 Silverton CO 81433
970.387.5161 info@mountainstudies.org mountainstudies.org

Mancos Valley Beaver Ditch Company
7600 Road 38
Mancos, CO 81328
September 21, 2021

Gretchen Rank
Manager
Mancos Conservation District
604 Bauer Ave.
Mancos, CO 81328

Dear Mrs. Rank:

The Mancos Valley Beaver Ditch Company discussed the idea of remote metering in the Mancos Valley for irrigation diversions at our annual meeting on September 17, 2021 and feels that the 'Mancos Valley Smart Metering Project' could greatly improve the management of the river. We believe this project is worth our time and attention and would like to participate. The ditch company is willing to install the needed metering and radio technology at the Beaver diversion to be part of a Valley-wide server for irrigation diversions. We would like to request funding assistance to whatever extent it is available as this would greatly ease the burden on landowners for better management of our River. The ditch company feels it would be in the interest of all parties involved to have the Mancos Conservation District be the fiscal agent for this multi-ditch project. We look forward to working together to improve our watershed.

Thank you for your time,

Ben Wolcott
President
Mancos Valley Beaver Ditch Company

Sheek Ditch Company
7600 Road 38
Mancos, CO 81328
October 5, 2021

Gretchen Rank
Manager
Mancos Conservation District
604 Bauer Ave.
Mancos, CO 81328

Dear Mrs. Rank:

The Sheek Ditch Company discussed the idea of remote metering in the Mancos Valley for irrigation diversions and feels that the 'Mancos Valley Smart Metering Project' could greatly improve the management of the river. We believe this project is worth our time and attention and would like to learn more. The ditch company is willing to install the needed metering and radio technology at the Sheek diversion to be part of a Valley-wide server for irrigation diversions if it is not of great expense to the Ditch and other ditches are participating. We would like to request funding assistance to whatever extent it is available as this would greatly ease the burden on landowners for better management of our River. The Sheek Ditch Company would like to make a final decision on whether to participate when exact costs are known. The ditch company feels it would be in the interest of all parties involved to have the Mancos Conservation District be the fiscal agent for this multi-ditch project. We look forward to working together to improve our watershed.

Thank you for your time,

Ben Wolcott
President
Sheek Ditch Company

Henry Bolen Ditch Company
6875 Road 38
Mancos, CO 81328
September 14, 2021

Gretchen Rank
Manager
Mancos Conservation District
604 Bauer Ave.
Mancos, CO 81328

Dear Mrs. Rank:

The Henry Bolen Ditch Company discussed the idea of remote metering in the Mancos Valley for irrigation diversions at our annual meeting on September 11, 2021 and feels that the Mancos Valley Smart Metering Project could greatly improve the management of the river. We believe this project is worth our time and attention and would like to participate. The ditch company is willing to install the needed metering and radio technology at the Bolen diversion to be part of a Valley-wide server for irrigation diversions. We would like to request funding assistance to whatever extent it is available as this would greatly ease the burden on landowners for better management of our River. The ditch company feels it would be in the interest of all parties involved to have the Mancos Conservation District be the fiscal agent for this multi-ditch project. We look forward to working together to improve our watershed.

Thank you for your time,

Ben Wolcott
President
Henry Bolen Ditch Company